AMERICAN GAS ASSOCIATION MONTHLY

Vol. VI No. 10

OCTOBER, 1924

Sixth Annual Convention Atlantic City

October 13-17, 1924

Registration Fee at Coming Convention

At the coming Sixth Annual Convention at Atlantic City, there will be a registration fee of $1.00. In other words, every member and non-member, on registering, will be required to pay this registration fee of $1.00 for himself and for each of his guests before he receives his convention badge. Without this badge, admission to the pier will not be possible.

This registration fee will be applied to the entertainment features during the week. Our members will not be asked to purchase entertainment tickets. With this method there will be no charge for the entertainment features, with one exception. That is the special theatre party on Thursday night at the Globe Theatre. Tickets for this will be on sale at the Entertainment window at the Registration desk.

The Convention badge admits to all other functions, as well as the pier.

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American Gas Association Monthly

Vol. VI OCTOBER, 1924 No. 10

Less than Nothing

This is a thought to pass on to our sales departments, to our operating departments, to our accounting departments, to our executives—in fact, to every single employee in our industry, be he in the lowest or highest position.

To the person not technically inclined, which means most of our public, air is nothing, and gas is lighter than air. The man selling gas as a commodity must remember this. Gas alone is less than nothing to the majority. Therefore, and here is the thought, the sale of gas must be backed up with service.

Service is something tangible that the householder can and does appreciate. From a sales standpoint, service is heavier than lead, more valuable than gold and more appreciated than pay day. It is something more.

It is what we are morally obligated to give our customers to the very best of our ability. It is, if well done, more precious than our franchises and incorporation papers for if we neglect it, those franchises and papers will soon be worth less than the very paper on which they are written. It is the engine that drives our business vessel on its way. If properly maintained, it may well prove to be the oil that will calm the waters when heavy storms swoop down.

Gas alone is less than nothing.

Gas plus *service* is one of the greatest assets of modern civilization.

AMERICAN GAS ASSOCIATION MONTHLY

Vol. VI OCTOBER, 1924 No. 10

Valuation for Rate Making*

J. A. EMERY, Vice-President of Ford, Bacon & Davis, New York City

PEOPLE CONNECTED with public utilities are principally interested in valuation as it affects the rate base used by regulatory bodies in establishing a rate structure, consequently in this paper this feature of valuation only will be considered.

There has been such a volume of literature published on valuation and rate making in the last fifteen years that it is quite difficult to present any new ideas. However, presentation of the problems involved in valuation for rate making purposes from a strictly engineering point of view may be of interest.

The object of valuation is to set before courts or rate fixing bodies the necessary facts to guide them in arriving at a "fair value" upon which the rate should show a fair return. The function of engineers in this presentation is to provide the facts, not to determine the "fair value." This determination is the function of the authorities after logical presentation to them by attorneys of the law and facts. Consequently, as this is a consideration of valuation from an engineering standpoint strictly, no attempt will be made to quote authorities or precedents. In fact, rate fixing by enacted law as a substitute for natural economic law is comparatively new and precedents must be made rather than followed if we are not to be led into serious economic errors.

Mechanics of Valuation

The mechanics of valuation are briefly as follows:

First, an inventory of physical property is prepared, either entirely by inspection in the field or from reliable records checked by inspection. Concurrently, the physical propety is inspected for condition. This latter inspection for condition has a twofold use, as it provides the data on which to base a reasonable annual allowance for replacements and, secondly, if the present value is to be fixed by depreciated cost, it determines the amount which should be deducted from new cost in arriving at present value. Further, such an inspection for condition makes it possible to determine with fair accuracy whether the amounts included in operating expenses in the past have been sufficient for the proper maintenance of the property.

Inspection for condition as outlined above reveals the true state of the prop-

*Paper read before the Annual Convention of the Natural Gas Association of America, Cleveland, O., May, 1924.

erty much more accurately than any theoretical applied depreciation based on life tables. In the first place, life tables take no account of partial renewals which are going on constantly in the regular maintenance of the property. In the second place, it is hardly probable that life tables which are applicable to one property will be even approximately applicable to another property operating under different conditions. Depreciation rates for each property must be determined from the facts developed by the inspection of that individual property and only in this way can they approximate fairness. Upon completion of the inventory, which is simply an unpriced list of physical property, and the inspection for condition, it is customary to add to the inventory an allowance for omissions. It is obvious that in inspecting a finished property, much of which is buried, many items will not be discovered and it is for this purpose that it is customary to allow a small percentage in addition to the inventory of items actually counted or measured.

Pricing the Inventory

The next step is pricing the inventory so prepared. There are numerous theories of pricing, of which the ones most used are as follows:

(a) "Book cost" or, as it is sometimes called, "original investment." This is seldom available. The books of the older companies were not set up with any view to use for the establishment of a rate base or rate structure. They seldom present a complete history of even the construction expenditures and almost never show in any complete form the pre-construction expenditures or those for general supervision, consequently it will only be in exceptional cases that the "book cost" represents either the complete "original investment" or any measure of a fair value.

(b) Estimated historical cost. This is an attempt to correct the omissions which are almost always found in book costs by using book costs where available and adding thereto for missing expenditures the estimated cost thereof at the prices ruling at the time installed and further adding fair allowances for omitted overhead expenses.

(c) The average of pre-war prices. This is usually a pricing of the inventory on the basis of the average of prices ruling either over a period of five years or ten years prior to January 1, 1915. It is simply a further attempt to approximate original investment.

(d) The average of prices ruling over a period of three, five or ten years last past.

(e) The prices now current; in other words, the cost to reproduce new as of a given recent date.

(f) Prices at the estimated level or average of a given period in the future through which the proposed rates are to be in force.

(g) The cost new of a modern plant capable of performing the same service as the existing plant; in other words, the cost to replace rather than the cost to reproduce. In the natural gas industry, this theory does not produce a materially different result from that arrived at by applying the prices now current to the actual inventory of the existing plant.

(h) The market value of securities.

It should be noted in passing that theories (a) and (h) above are not engineering determinations but accounting determinations. They are mentioned here simply for the sake of completeness. It also is evident that in theory (g) the cost to replace is not based on the inventory of the existing plant but on an estimate of the modern plant that would

be required to perform the same service as the existing plant. This theory would have weight only in instances of antiquated plants for which could be substituted a modern plant of lower first cost or greater efficiency. Where the art has not changed materially during the life of the existing plant, there is nothing to be gained by the study of the problem from the standpoint of this theory of replacement.

The values arrived at under theory (h) are dependent on the earnings and, consequently, can not be used to determine rates, although they do give indication of the proper rate of the return to be allowed.

It is obvious that, to be fair, all prices used for material and for labor must take account of local rates, conditions and customs. These differ to some extent with each locality and a careful study should be made in each individual instance in order that the engineering testimony as to cost may be entirely competent.

So far the priced inventory, irrespective of the theory upon which the pricing is done, represents only the bare material and labor cost of the physical plant. It is necessary, in order to arrive at total construction cost, where the actual facts are not available, to add allowances, based on experience on other similar work, for:

(a) *Omissions, Incidentals and Contingencies;* covering such items as cost of purchasing, storekeeping, wastage, pay-roll and other insurance, timekeepers, watchmen, governmental permits and inspection, protection of work, damages during construction due to storms, and numerous other similar items which will vary somewhat as between different pieces of construction. Many of these incidental expenditures are often allowed for in calculating inventory quantities and in making up unit prices.

(b) *Pre-construction Cost;* representing the expenditures made prior to construction for preliminary plans, surveys, reports and time and expense of promoters.

(c) *Organization and Legal Expenses;* covering the services of general officers of the company in the general direction of the construction work and of the corporate affairs during the construction period and preparation for the beginning of operation; and also all legal services and expenses in connection with such activities.

(d) *Engineering and Superintendance;* covering the time and expenses of the engineering force engaged on the work, including consultants, architects and inspectors; and also the general supervision of construction which may or may not be consolidated with the engineering organization.

(e) *Interest and Taxes During Construction;* being the accruals on these accounts during the period of construction and prior to the beginning of complete operation.

(f) *Cost of Financing;* covering only the actual normal expenditures of financiers in distributing to investors the securities issued by the company.

Dependent upon the method pursued in the construction of the plant, or the method that would be pursued in reproduction, it is sometimes necessary to add other overhead charges, such as contractors' profits or a percentage to cover piecemeal construction.

The above items are as clearly a part of the construction cost of placing the physical property in existence ready for service as are material and labor and must be added to show the complete direct expenditures of the company for the construction of physical plant. To this cost of physical plant must now be added:

(a) *Working Capital,* including cash balance necessary for the proper operation of the property, material and supplies on hand, including, in the case of a gas property, the first cost of the necessary gas to fill the system, accounts receivable, etc., and finally

(b) *Going Concern Value.*

It may be interesting here to quote an actual example of certain of these percentages which were determined from the recent construction of a natural gas project. The percentages are based on the labor and material cost of the physical property, exclusive of wells or leaseholds. They are as follows:

	Per Cent
Engineering, including preliminary report	5.16
Interest during construction	4.26
General office administration, including cost of soliciting customers prior to operation	4.28
Taxes, insurance, injuries and damages	.39
Legal expense, including legal expense prior to construction	1.48
Pre-construction cost in part	3.14
Cost of placing securities	4.06
Total general overheads, exclusive of promotion expense and original development expense of gas field	22.77

Going Concern Value

It is exceedingly difficult to derive going concern value arithmetically. It is really measured by the difference in the price at which the securities of a purposed enterprise not yet under construction would sell and the price at which the securities of this enterprise would sell after it had demonstrated its usefulness.

Going concern value is really a composite of values derived from two radically different sources; first, from the adjustment of the different elements of the physical plant to operate smoothly in unison, and; further, as the organization which has in charge the operation of the above becomes experienced in the peculiarities of the particular tool which has been put in its hands, this organization uses it more economically and to better advantage. No good operating organization ever stands still. It is improving both the tool which it is using and its own methods of using that tool each year that it continues to function.

The second source of going value is the proven ability of the enterprise to find a market for its service; in other words, the additional value of a connected load. It is usually claimed that a regulated and consequently non-competitive enterprise can have no good-will value, and the element of going concern value should not be confused with the good-will value of an unregulated industry. Perhaps the idea can best be conveyed by defining going concern value and good-will value as they would apply to a non-regulated industry.

Under the condition of free competition, going concern value would seem to be constituted of those elements of plant improvement and organization experience which tended to reduce the cost of the product, while on the other hand good-will value would be the result of those elements of business policy such as liberal business treatment, prompt deliveries, uniform or superior product, etc., which tend to enable the industry to command a higher market price for its product.

Present Fair Value

Courts and commissions up to date have adopted no uniform policy as to the relative weight in arriving at present

"fair value" that should be given to "original investment" and cost to reproduce."

It is the avowed purpose of regulation that the rates set thereby shall be such as to attract to the business regulated such funds as are necessary for extension and development. To accomplish this end, regulation must proceed with due regard to the fundamental economic laws which control all business, whether regulated or unregulated.

Value is measured in the final analysis by the bargain which would be struck between a willing vendor and a willing *purchaser*. A willing purchaser considering the acquisition of a dead plant without operating organization or customers would gauge the price which he would pay for such a plant by comparison with the estimated cost to him at current prices of an equivalent new plant, from which cost he would deduct the expense of putting the dead plant in equivalent to new condition. In other words, he would deduct from "cost to produce now" the estimated depreciation.

On the other hand, a willing purchaser considering the acquisition of a running plant operated by an efficient organization and with market for its product would not make any deduction from "cost new now" unless maintenance had been neglected and the plant allowed to run down. In either case, the willing purchaser would be guided by the "cost new now" rather than "original investment."

The Rate Base

It follows that if regulation is to provide rates that will encourage development, the rate base for a going property must be established on the current "cost new." Situations exist, of course, where, owing to unwise original investment or changed conditions, rates high enough theoretically to produce a fair return would fail to do so in practice. In other words, in such situations the "value of the service rendered" will not produce a fair return on the property. Economic law will not permit the free flow of capital to regulated industries unless both rate base and rate of return are in accordance therewith, and, on the other hand, economic law will prevent the application of rates that are higher than the "value of the service rendered."

A current illustration of this action of economic law can be seen in the anthracite using district of the East. The anthracite industry has for a number of years past been subject to government scrutiny and, to a certain extent, regulation. The price of anthracite has steadily increased until today we see thousands of homes in the East substituting, in domestic heating appliances, oil burners for former anthracite fires; in other words, the price of anthracite has risen to the point where the "cost of the service rendered" as measured by competition of another fuel is rapidly causing a substitution.

For many years it has been customary to require both principle and interest of long-term securities to be payable in gold. Gold has been the standard of value because, prior to our recent war period, it was not subject to violent fluctuations in purchasing power. Consequently the provision in long-term securities that principal and interest should be payable in gold was a guarantee to the investor that he would be repaid his principal and interest in a form which had practically the same purchasing power as did his savings at the time of their investment. It would consequently seem unfair today, with the tremendous decrease in the purchasing power of the dollar, to demand that an investment made in pre-war dollars should today be reimbursed as to

principal and interest in dollars, the purchasing power of which is only 65 per cent of that possessed by the dollars originally invested, and this is exactly what occurs when "original investment" is the basis on which a property is valued and a rate is fixed.

Almost all of the rate findings in the past have been based on the so-called depreciated value of the property regulated. The *habit* of using depreciated value as an element in rate regulation undoubtedly originated in the natural interpretation of physical value by itself without respect to inseparable and concomitant business development where such exists. The true and essential meaning of good will or business development was not appreciated in the earlier examinations into values for rate making, so that between these two lapses of reasoning the accumulation of depreciation of parts which always takes place in a large complicated property between the time when it is new and the time when it reaches a state of normal replacement and maintenance, was left without chance of recovery. In the case of a public utility, it is generally impracticable and contrary to public interest to collect the amount of such accumulation through rates in force in the early years, while the business is developing. If it be so collected in the early years and applied towards retirement of investment, then the consumers in the later years when the density of business is greater would enjoy lower rates than the consumers in the earlier years when the density of business is less and the enterprise is struggling to develop.

An employer hiring an axeman to get out cordwood is not interested in whether the workman's axe has had a inch ground off the bit in the process of sixteenth of an inch or a quarter of an repeated sharpening. The employer is interested in knowing if the axe is sharp. He also knows that the workman will probably accomplish a greater volume of work with an old tool, to the weight and poise of which he is accustomed, than he would with a brand-new tool to which he was not yet accustomed. If, however, it was a question of purchasing the axe instead of employment of the workman, the purchaser would want to know to what extent the steel in the bit had been ground away or, in other words, how much of the life of the tool had been used up. The same distinction holds in the comparison of the purchase of a bare plant and the establishment of a rate base for a going plant.

It is a basic principle of business (assuming prudent investment and operation and adequate maintenance) that an owner is entitled to a fair return on the value of property devoted to the business (which return must of necessity be proportional to the risk involved) and to the restoration, upon the cessation of use of his property, of the value thereof.

Depreciation

In considering the question of depreciation, its purpose, amount and deductibility from value, confusion has resulted from failure to differentiate:

First, between the different conditions under which properties are operated, and,

Second, the different purposes for which depreciation is set up.

In general, two classes of properties may be broadly distinguished:

(a) Those which are expected to continue to render service for a practically unlimited period.

(b) Those in which the period of service is limited by the exhaustion of the commodity handled, as, for example, a railroad built for the purpose of recovering lumber or mineral, or a pipe line built for the purpose of transporting oil or natural gas.

In the case of both classes of property, it is desirable to set aside year by year or month by month an amount sufficient to equalize the renewals and replacements necessary to be made to keep the property in operating condition. This provision should properly be termed "depreciation" and its amount should be determined by good business judgment based on past experience. It will be determined in the case of individual units making up the property as a whole, by either deterioration in the case of parts on which wear is rapid or supersession in the case of parts in which the advance of the art is rapid Whichever of these two, deterioration or supersession, is likely to occasion the replacement of a unit in the less time is the one which will fix the annual amount which should be set aside to meet replacement when it falls due, in order to equalize year by year the operating costs.

Viewed from this standpoint, accruals for depreciation are simply advance provisions in operating expenses for eventual heavy replacements and have the effect of equalizing the cost of production. These replacements could, of course, be met by carrying a sufficient surplus and providing for their cost from time to time by appropriations from surplus. This method, however, would not equalize from year to year the cost of production. Annual accruals for the purpose of meeting replacements are proper in that they charge, through rates based on their inclusion in expense, the burden for replacements of plant against the current users of the service rendered by the plant.

These accruals are of the same nature as insurance premiums and are no more to be considered as a reduction in plant value or a partial repayment to the owner of plant value than are annual fire insurance charges. In fact, it would be fair to view the balances in such so-called depreciation accounts as constituting an essential part of the working capital of the business.

If depreciation accruals are not currently distributed to owners (and they never are so distributed), there can be no just claim for their deduction from value in arriving at a rate base.

In the case of the second-class property, the period of service of which is limited by the exhaustion of the commodity handled, it is necessary in the first place to set up annual accruals to depreciation for replacements as defined above, in order that the property to the end of its life shall be capable of performing normal service. In addition, in the case of these properties having a limited term of usefulness, it is, in accordance with the fundamental business principles mentioned before, necessary to accumulate a fund for the retirement of the property at the termination of its usefulness on account of exhaustion of the commodity handled or the termination of the right to do business. This latter charge is in addition to the depreciation set up to take care of replacements, and, for the purpose of a distinctive term, will be called "amortization."

Amortization

It is possible to set up amortization on either of two bases:

First, on the so-called sinking fund basis on the theory that the annual amount set aside for amortization will be invested at banking interest and together with the accruals of this interest equal, at the termination of serviceability of the property, the value of the property as set at any given time at which a rate determination is made; or,

Second, the annual amounts accrued to amortization can be suitably invested and the earnings resulting from such investment added to the earnings of the property from its charges for service in ar-

riving at the rate of return resulting from the charges fixed for service.

Depreciation, inasmuch as it is simply an equalization of expenditures for replacements, in any event should be based on current prices. Amortization, however, if based on current reproduction cost rather than original investment, will, on a declining market, eventually produce a fund for reimbursement of investors less than their original investment. For example, a propety built at the peak prices existing in the middle of 1920 if amortized today on the basis of cost to reproduce would not return the original investment in dollars, but only the original investment in purchasing power of money.

It would further appear that the question as to whether "original investment" or "present fair value" is to be the measure of the amortization feature of expense included in the rate for properties whose term of usefulness is limited, depends on whether the policy adopted is to repay an investor the equivalent of his original investment in purchasing power or in pounds of gold the purchasing power of which has changed. If the latter policy is to be adopted, the natural result will be a demand for higher rates of return to compensate for this additional risk.

It should be noted in passing that amortization reserves can not be invested in extensions to a property whose period of usefulness is limited and for the purpose of retiring which they are accrued, but must be invested in either some other sound security or at banking rates of interest.

Conclusions

Defined and accrued as above, neither depreciation nor amortization reserves are distributable to the owners of a property excepting as reimbursement for the value of the property at the termination of its use, and consequently any use of a depreciated value as an element in determining a fair rate to be charged for service will result in a constant decreasing rate of return on the value of property which is tied up in rendering the service. The usual simple arithmetical demonstration of a ten year life and ten per cent return illustrates this perfectly. The average return resulting therefrom is about 8.5 per cent on the value of property instead of the ten per cent assumed.

If the above discussion is sound, it would appear that the rate base which accords with economic law is the undepreciated present fair value and that fair value must take full account of present cost to reproduce. A number of the recent decisions of courts and commissions are apparently leaning toward this view.

❖ ❖ ❖

Fields are won by those who believe in winning.

—T. W. Higginson.

Louis Stotz Resigns as Assistant Secretary-Manager

Louis Stotz.

LOUIS STOTZ, who has been continuously in the service of the American Gas Association and one of its predecessor associations, the National Commercial Gas Association, for the past fifteen years, tendered his resignation to the Executive Board on September 17.

He was appointed the first permanent Secretary of the National Commercial Gas Association January 1, 1910, and served in that capacity until June, 1918, the date of the merger of the American Gas Institute and the National Commercial Gas Association into the present American Gas Association. The Executive Board of the American Gas Association thereupon appointed him Assistant Secretary-Manager and Secretary of the Commercial Section.

Mr. Stotz becomes the Assistant Managing Director of the "Own Your Home" Exposition, Inc., which operates annual expositions in Chicago and New York. He becomes the resident manager in Philadelphia, where a similar exposition will be conducted in the Philadelphia Commercial Museum next May. His address in the Quaker City will be the Witherspoon Building, 1319 Walnut Street.

On acting on this resignation the Executive Board said:—

With regret the Executive Board of the American Gas Association receives and accepts the resignation of Mr. Louis Stotz as Assistant Secretary-Manager, to which position he was elected by the first Board of this organization in June, 1918.

Most of the active life of Mr. Stotz has been bound up with the gas industry. Only a few years after his graduation from Girard College in Philadelphia he made his first contact with the gas business through employment with the Welsbach Company at Gloucester, N. J., 1900 to 1903. During the next three years he had experience in association work in connection with the organization of state societies of public accountants and the subsequent federation of these state societies. From 1908 to 1910 he was in the employ of The United Gas Improvement Company in its New Business Department.

The retirement of Mr. Stotz after fourteen years' continuous service in the fore of the gas industry of America marks the conclusion of active, efficient and successful work. The Executive Board believes that the record he has made, coupled with the wide acquaintance it has given him, will materially assist in his success in his new field of endeavor and the Board wishes him a full measure of such success.

Affiliated Association Notes

Canadian Gas Association

A splendid program, unbounded hospitality and ideal weather combined to make thoroughly enjoyable the Seventeenth Annual Convention of the Canadian Gas Association in Toronto, August 28 and 29.

One of the features of the meeting was the address on "Our Experiences with Tully Gas at Belleville, Ontario," by Wm. Harden. Mr. Harden displayed possession of a large fund of infectious and effective wit and his running comments on his paper kept the convention convulsed with laughter. President Jefferis implored Mr. Harden never to miss another convention.

Papers presented, all of them of a most interesting nature, were as follows: "Description of Manufactured Gas Plant for Iriquois Gas Corporation, Buffalo, New York," J. S. DeHart, Jr.; "The Industrial Fuel Situation," Frank F. Cauley; "Machinery in the Distribution Department of a Gas Company," E. S. Stanton; "Recent Gas Manufacturing Developments at Rochester, N. Y.," W. H. Earle; "Plotting Relative Costs of Fuels," R. O. Wynn-Roberts; "What About House Heating?", H. E. G. Watson.

Reports were made by the Canadian Gas Association's representatives on the Managing Committees of the Sections of the American Gas Association. That on Gas Standards and Service, by Mr. Arthur Hewitt of Toronto, gave details of heating values under the British Law.

Officers were elected for the ensuing year as follows:
President: E. R. Hamilton, Halifax, Nova Scotia.
Vice-Pres.: J. J. Humphreys, Montreal, Quebec.
2nd Vice-Pres.: P. V. Byrnes, Hamilton, Ontario.
Secretary-Treasurer: G. W. Allen, Toronto, Ontario.

The entertainment features were well arranged. A luncheon on the first day at the Royal Canadian Yacht Club, at which that day's business sessions were held, was addressed by Mayor W. W. Hiltz, of Toronto, Hon. Thos. L. Church, Member of Parliament for Toronto, President Jefferis, Mrs. Ethel M. Wood, of London, England, and Alexander Forward, Secretary-Manager of the American Gas Association. Members and guests heard the famous 2000-voice Pageant Chorus at the Canadian National Exhibition in the evening. The ladies were entertained on the first day by a boat trip around the harbor and lake. Mr. Arthur Hewitt, General Manager of the Consumers' Gas Company of Toronto, Mr. W. B. Johnson of the same company, and Mr. J. McLaverty, Chairman of the Registration Committee, were busy entertaining, while Mrs. Hewitt, Mrs. Johnson and Miss Nella Jefferis took care of the ladies.

The announcement that employees of the Canadian companies had been made eligible to the award of the A. G. A. Meritorious Service Medal, inadvertently omitted in the first draft of the terms of award, met hearty approval, as did a telegram of congratulation from President Klumpp of the American Gas Association.

Southwestern Public Service Association

It is generally agreed that an association secretary can accomplish a great deal and become better acquainted through personal visits to the towns served by the members of his association. However, every association secretary is not up against the proposition that confronts Secretary E. N. Willis of the Southwestern Public Service Association. He recently visited only one section of Texas, the southeastern, and had to drive his machine over 1,500 miles of the vast territory covered by his association. There are 68 towns having utilities in this one section visited by Secretary Willis.

Southern Gas Association

The Proceedings for the Sixteenth Annual Convention of the Southern Gas Association held in Augusta, Georgia, on April 22, 23 and 24, 1924, have been issued under the direction of the Secretary, John P. Connolly, of Charleston, S. C. They are attractively printed and bound and will form a valuable reference book of the papers presented at that convention.

Affiliated Association Notes

Michigan Gas Association

The 32nd Annual Convention of the Michigan Gas Association will go down in the history of that Association as one of its most successful gatherings. The convention was held at the Hotel Statler, Detroit, Michigan, in conjunction with that of the Michigan Electric Light Association, on September 9, 10 and 11.

The convention opened with a joint session of the two associations on the evening of September 9 under the auspices of the Michigan Committee on Public Utility Information. The report of Director Alfred Fischer indicated splendid results for the year, particularly in cooperating with educational institutions and its plans for Open House Week of Utilities in Michigan, October 6 to 10. An address on the activities of the Associated Advertising Clubs of the World was delivered by its Counsel, Byron Shinn. That Association's efforts to suppress the sale of worthless stocks through advertising are, the speaker mentioned, making more money available for sound investments.

The sessions of the Michigan Gas Association opened with the reports of the Secretary and Treasurer, Fellowship Committee (in charge of probably the oldest industrial fellowship in the United States which is conducted at the University of Michigan under the direction of Prof. Alfred H. White), Accounting Committee, and the Public Utility Information Committee. The President, George H. Waring, presented an address which was a happy one in its analysis of the present condition of the gas industry in Michigan and his predictions for the future. An address by Secretary-Manager Alexander Forward of the American Gas Association mentioned the country-wide favorable condition of utility stock, especially gas company securities. He also briefly reviewed the activities of the national body.

The following papers were presented and in each case discussion resulted which added considerable value: "The Use of Oxygen in Gas Producers," Professor Alfred H. White; "Results of Five Years' Operation of a Vertical Retort Gas Plant at Fond du Lac, Wisconsin," M. H. Frank; "Locating and Reducing Excessive Use of Boiler Fuel in Small Gas Plants," C. L. C. Kah, Alpena; "Electrical Precipitation of Water Gas Tar," Charles F. Morris, Denver; "Labor Saving Machinery for Street Construction Work," Henry Fink, Detroit; "Trenching Machines" (with moving pictures), A. G. Ford, Aurora, Illinois; "Bronze Welled Joints"—moving picture; "One Season's Experiences in House Heating with Gas at Salt Lake City," George R. Horning; "Doherty Three Part Gas Rate," D. E. Byerly, Adrian; and "Coke Sales from the Standpoint of the Smaller Properties," F. E. Caton, Albion.

Through the recent sudden death of Henry W. Douglas of Ann Arbor, the Michigan Gas Association has lost one of its founders, past presidents and most loyal supporters. The passing of Mr. Douglas was very effectively mentioned and a resolution adopted to his memory.

The officers elected for the coming year were: President, Chester Grey of Lansing; Vice President, B. G. Campbell of Pontiac; and Secretary-Treasurer, A. G. Schroeder.

The entertainment features of the convention were arranged jointly with the Michigan Electric Light Association, the main feature of which was a very successful banquet and dance. Dr. M. S. Rice delivered a fine address on "Junk" at the banquet.

New England Association of Gas Engineers

Announcement is made by Secretary John L. Tudbury that the 1925 Convention will take place at the Hotel Biltmore, Providence, R. I., February 18 and 19. This is the first time in some years that the convention of this Association has been held outside of Boston.

Preventing Gas Main Accidents

Bulletin No. 1. Accident Prevention Committee.

RECENT ACCIDENTS have demonstrated the necessity of taking detailed precautions when making repairs or changes of any kind in gas mains. Where a reasonable amount of care is taken, such work is not accompanied by any undue hazard, but as in all other operations where gas is involved, certain fundamental rules must be observed. The most essential of these are:

Planning the Work

1. The man in charge should, in cases of complicated shut-down, tabulate in advance, in writing, the proposed operations in their exact sequence, including the proper manipulation of all valves and all changes in piping or equipment.

2. This tabulation should be checked independently by others, preferably by the superior in charge, and an approved schedule of operations should be prepared and agreed upon by those responsible, who will sign the orders as an indication of complete understanding.

3. To be prepared for any possible emergency, a diagrammatic sketch or layout of the existing lines and control valves should be available right at the point of operation. Special note should be taken as to the direction in which the various valves turn and of the number of turns necessary to insure the complete closing of each valve.

Executing the Work

4. The man responsible must follow the schedule implicitly and make certain that each operation has been properly performed before any openings are made in the mains.

5. No openings other than bag or vent holes should be made in the mains until it is certain that the pressure is off.

6. Under no consideration must valves be depended upon for absolute tightness, but bags, which, except in low-pressure mains less than 6 inches in diameter, *must always be used in conjunction with stoppers*, must be placed against all possible sources of gas, with adequate vents to carry away all gas seepage. The amount of dead gas between the work and the point where gas is shut off—whether this point be a valve or a stopper—must in all cases be reduced to a minimum by adequate venting. The vent which must be maintained should be covered with a fine gauze screen at the discharge end, which discharge must be carried well above the heads of the men.

7. When blank flanges are to be removed from lines which may have been under pressure, the bolts should first be slacked off and the flange carefully chiseled apart. No further work should be performed until it is made certain that there is no dangerous passage of gas through this aperture.

8. Where the continuity of the main is broken or where a new connection is made, a bond wire should be installed to conduct any electric current which may be carried by the main, and so prevent a spark which might ignite any accumulation of gas.

9. When finally closed, no valve must be touched until the work is completed, and then must be opened only on the express order of the man in charge after he has personally assured himself that all work is perfectly gas tight and safe.

General Precautions

10. Where work is to be done in confined places, such as basements or vaults, proper gas masks must be used, and in *any case* these must be immediately available for use in emergencies.

GENERAL

CHAIRMEN OF GENERAL COMMITTEES ORGANIZED TO DATE

Accident Prevention—F. W. Fisher, Rochester, N. Y.
Amendments to Constitution—Wm. J. Clark, Mt. Vernon, N. Y.
American Engineering Standards Committee, Representative on—A. H. Hall, Cambridge, Mass. —(Alternate Representative) W. J. Serrill, Philadelphia, Pa.
Award of Beal Medal—J. B. Klumpp, Philadelphia, Pa.
Chamber of Commerce—R. B. Brown, Milwaukee, Wis.
Cooperation with Educational Institutions—W. G. Gribbel, Philadelphia, Pa.
Customer Ownership—Chas. A. Munroe, Chicago, Ill.
Education of Gas Company Employees—B. J. Mullaney, Chicago, Ill.
Entertainment—Wm. J. Clark, Yonkers, N. Y.
Finance—James Lawrence, New York, N. Y.
Gas Code—W. R. Addicks, New York, N. Y.
Gas Standards and Service—R. B. Harper, Chicago, Ill.
National Fire Protection Association—R. S. Doull, New York, N. Y.
Nominating—H. A. Norton, Boston, Mass.
Rate Fundamentals—H. M. Brundage, New York, N. Y.
Representation on National Joint Committee of Public Utility Associations—D. D. Barnum, Boston, Mass.; R. B. Brown, Milwaukee, Wis.; H. L. Doherty, New York, N. Y.; A. Forward, New York, N. Y.; C. H. Geist, Philadelphia, Pa.; J. B. Klumpp, Philadelphia, Pa.; A. P. Lathrop, New York, N. Y.; Chas. A. Munroe, Chicago, Ill.; Wm. L. Ransom, New York, N. Y.
Simplified Practice—C. T. Aaron, Boston, Mass.
Standard Gas Appliance Specifications—W. T. Rasch, New York, N. Y.
United States National Committee of International Commission on Illumination, Representatives on—Howard Lyon, Gloucester, N. J.; E. H. Earnshaw, Newark, N. J.; G. G. Ramsdell New York, N. Y.

Some Aspects of Gas Cookery

In Which the Matters of Heat Regulation and Equipment are Considered as Culinary Ingredients

This article appeared in the September issue of "House & Garden" and is well worth the attention of our readers. (Editor's Note.)

ETHEL R. PEYSER.

BANISH IMMEDIATELY from your mind the idea that gas cookery lacks style, that is not being used as much as heretofore and that its young sister, electricity, has made gas cookery take a back seat! The fact is that there is in use today three times as much gas as there was twenty years ago; and double the amount of that used ten years ago; and forty-five million people use gas for cooking their meals; and there are some 70,000 miles of gas mains in the United States! So gas Main Street is the longest main street on record!

This article will not describe gas ranges, except as their parts come up in the discussion of cookery. Neither will this article give recipes, but it will, however, try to give you a few ways to get the best results out of your gas cookery and your gas ranges.

The ancient hit or miss methods of cooking are passing from the earth. The popping of one's head into the oven, imperiling one's hands and head, to push in or pull out pieces of paper to see if they are sufficiently singed for the good baking of the cake, is a well lost adventurous feat! Today there are heat and gas regulators which have banished for you the uncertainties of cooking by gas, so that you can preserve your front hair from oven roastings.

The heat regulators with varying attractive trade names come with most of the new stoves, so that if you are tired

of guessing and tired of spoiling expensive ingredients, you can put an end to it by the use of these new ranges which treat time and heat simply as two more ingredients. Their function is not to tell the temperature of the oven but it is to keep the oven at a certain temperature by regulating the supply of gas. If the oven is open, the regulator will speed up the temperature a bit, when it closes it will rest a bit, and so on.

For example, should you wish to roast a piece of beef you would set the regulator at (say) 500 and go away and attend to your business. At the end of the time, according to the chart and the weight of the meat, you would come back again and the meat would be cooked. In this way you get the benefit of the fireless emancipation and become not a serf, but a free-woman! You can set an alarm clock if the food to be cooked in the oven is to come out at some set time, and then, if you are playing the piano you will hear the bell and go into the kitchen and take out the roast.

When you first get a range with this regulator on it, you may find, especially in baking, that cooking according to the temperature and time stated on the chart (which comes with your stove) does not give perfect results. Do not think that the regulator is wrong. For many cooks' cooking varies and no manufacturer can make a chart to fit every cook's variable use of liquid and sugar. So, the next time just adjust the regulator up or down, according to your last cooking experience. It is the regulator's elasticity that is so valuable. All machinery must be tempered to the individual user and occasion. If this were not possible machinery would soon pass out, as too inelastic for human use! Fancy the automobile whose paces could not be tempered to meet the up grades of the most capricious countryside! So do these regulators meet the moods of the most capricious bakers and roasters and they are legion.

The oven regulator is quite a marvelous thing, for you can be sure, whether the gas supply is regular or irregular, that the regulator will keep the oven at the temperature designated on the degree to which you have moved the dial.

Now there are ranges which cook on retained heat and are similar to fine fireless ovens. Furthermore, the regulator itself gives you a fireless comfort.

Then there are ranges today on which you can cook over the burner, firelessly! That is, you can cook on retained heat over the burner as well as in the oven. This is a real advance in gas cookery and worthy of trial.

Another interesting little improvement on gas ranges is the rack that slides easily, so that dishes may be removed from the oven with less danger to the fingers. The sanitary door is another thing too, which is of cast iron construction and being enameled on both sides is easily washed and removed from the stove itself. These are not aids to cooking, but show the trend of the ideas and ideals of the modern range maker, whose aim is to make gas cookery as nearly perfect as possible, in and out of the oven.

There are three ways of cooking by gas; by guess-work, which is the old and to be abandoned way, by regulator and by thermometer.

Now if you prefer the thermometer, we would suggest that you get a high grade thermometer that is not attached to the oven door, because they get out of order more swiftly than the one that is not rooted on a moving and banging back ground. The cheap thermometer is

fickle and is even more of a wastrel than a fickle man or woman!

It has been my lot to see kitchens equipped with the most modern of modern gas ranges and to witness in them the most antediluvian methods of cookery. This always eventuates in the lady of the house saying, "I cannot stand the new fangled stoves, gas is more expensive every year!"

The fact is, that gas is less expensive, by eight or nine times, than it was in our grandmother's day and, besides, the ranges are so built, that with the use of a little common sense, you can make your gas expenditure less than any expenditure in the house.

Gas is really very inexpensive; 7,000,000 American families, who cook by it know this, if they use it well.

Do not use gas or any other fuel unless you know something about its needs and characteristics. If you do you are but running yourself into needless trouble and expense. This can be said in the use of any fuel.

The most important things, of course, in the gas range are the gas supply and the range itself, which acts as the medium through which gas works. So, the first thing to do is to get a gas range that is suitable to cook for your own family; one that appeals to you from inquiry and others' experience as an able range; one that is made by a manufacturer of stability. Whenever possible, order it from your gas company so that you will get the service, or nearly all the service, that you need. For the gas company that serves you will serve itself, and the gas companies are becoming benign helpers instead of glowering corporations who want only to sell, sell, sell.

Now that you have bought the range, you must place it on a level floor. The cooking surface of your range should be about 38 inches high to avoid back breaking exercise while cooking. Whether you get the smooth top range (this looks like the coal stove top and gives you a large warming surface and no inconvenience from dropped foods and tilting utensils), the spider top, or the semi-top is entirely up to your own inclination.

But you must become a culinary coloratura, for whether you, after installing the range, use a white, yellow or blue flame is not only up to you, but must be studied *carefully* by you.

The large yellow or white flame is a crass waste of gas. Not only does this flame waste gas in itself, but as it burns, the products of its combustion collect on the pot or pan and make just that much more coating for the heat to go through. Thus, the cookery process is made longer and entails a longer use of gas, to say nothing of the soot painting on the base of the utensil which must be wastefully scoured, and thereby wearing out the pan that much quicker!

The blue cone flame, ¾ to 1 inch in height, with the purplish blue edge just touching the utensil, is the proper color for the flame. There is nothing harder to do than to convince the maid in the kitchen that a small, blue flame is hotter than a large, yellow flame. The maid will always think that you are trying to economize with the small flame and that you are mean and stingy and when you get out of the room back goes the flame on high, and your bills follows its altitudes!

Watchful watching is the only panacea here.

Last year I told a maid in one of my relatives' kitchens that the blue flame was the hottest. She stared at me because she knew I was a household economist and must be telling the truth. When she got over her surprise that I, too,

could believe in the blue flame, I asked her: "Why, Annie, don't people use candles to cook with, if the yellow flame is hot enough? Think how simple it would be!" Then I showed her the accumulation of soot when cooking with the candle and yellow gas flame. I contrasted this with the blue gas flame's good behavior and finally convinced her! I have digressed here a long time, because it is in this one fault that so many people err and then get dissatisfied with gas costs, so-called messiness and inefficiencies.

So, get to be a coloratura cook and the harmony of culinary life will be delightful and enduring. For, in the final analysis, this color sense holds, too, in knowing the shades of brown foods must attain in servings and garnitures!

These flames can be adjusted, if too yellow or white, by moving the air shutter on the mixing tube. Too little air usually makes a yellow flame. Should your flame pop, you have too much air, so again adjust your air supply. If you cannot get the right color or tone, send for the service man or woman, whoever is in your vicinity. Without proper color and noiseless operation, your burners will never give you gas comfort, which is yours if you want it.

The Importance of Cleanliness

If it were ever necessary for cleanliness in any apparatus it is necessary in the case of the gas range and gas machinery of any kind. The effect of clean burners on the reduction of your gas bills is tremendous!

When they get dirty, boil them in a strong solution of washing soda or lye, dissolved in water. It is well to have a regular day for this baptism and keep religiously to it. Rinse them thoroughly with clean water and do not forget to watch the hands in the process, as strong alkali bothers the skin.

The ovens, too, must be kept clean, and free from rust and souvenirs of past feasts. Go over them every week with a non-smelly oil, free from salt or other foreign matter, for enemy aliens in the oven walls will make havoc of cookery. Leave the oven door open after every baking, etc., for about 30 minutes, to dispel past culinary reminders and to keep the oven from rusting.

The proper size for utensils has much to do with low costs, the ease, swiftness and rapidity of cookery. The utensil should always be larger than the circumference of your gas burners. In this way the heat does not escape into the atmosphere but is leveled at the utensil itself.

Put out the gas before removing the utensil and again you will save gas bills.

Aluminum, glass or tin, will give quicker cookery results in *baking*. Whereas the enamels are excellent for surface burner cookery, they are not so quick in the oven.

The clever, three-in-one utensil makes it possible to cook nearly a whole meal over one burner, and the steam cooker gives you one meal cooked to perfection over one burner. So you see that cooking utensils mean a tremendous saving or waste. But really, it's the mind, after all, that saves you more money than everything together, if you will but use it.

Saving Graces

As we said above, use the low blue flame.

Keep the burners and ovens clean.

Use the simmerer and not the giant burner for everything possible, and hereby lies a gigantic saving. It is a fine thing to keep food warm and to use it for slow top range cookery. It's easier,

too, to keep the simmerer where you want it, than the large burners. Would that cooks would use it more. Seems to me I do more "turning down" of flames when I am in a gas cooking home than any other thing, for it seems such extravagance to use more fuel than necessary!

The top lighter is the best economy on the range. Always see that it is lit before the other burner is turned on.

Never try to light a burner until any gas which has previously escaped (due to a flash back in burner) has entirely vanished. You should report the flash back malady to the gas company.

The ranges with eternal lights require no matches. But see that this pilot light is lighted and does not go out and let gas escape.

Boiling point is 212°. Don't keep your water boiling so long and hard with the large flame, for you can't get more than boiling point and you are wasting money. Turn the flame down and save money and water and utensil.

You will save the discoloration of your pots and pans inside, above the water line, if you use the burner a little smaller than the utensil.

Slow cookery with small flame gives the best results in boiling, roasting, etc.

Keep the covers on your utensils for the most part, and have them fit well.

Turn off the burner, even if you are going to use it in a few moments—for you waste too much gas, as minutes pass into hours.

Remember, in the use of gas, it's always easier to use too much, than too little. Gas is intensely hot and a little goes a long way.

Don't spoil food by cooking with such a big flame that the food falls to pieces and all its best parts depart. The low flame will make you a better cook and your gas bills will be but pleasant souvenirs of good food rather than reminders of huge bank drawings.

You can save a lot of gas by roasting your potatoes around your roast and putting in a few extra for fried potatoes the next day.

May we say a word here on the art of broiling. This is a neglected form of cookery in America. and is the healthiest, as well as a most epicurean, way of cooking. There is no cooking so delicious as the empyreumatic flavors derived from roasting and broiling. Think of the difference between the broiled chicken and the fried!

On the gas range you can grill and broil with the highest art and efficiency. and if you do, your home will be known as epicurean!

Ovens are of many styles and fashions and types. The gas engineers are continually experimenting, until today you have ovens insulated for retained heat; for semi-retained heat; the ordinary ovens which have no retaining capacities, but can be just as useful with heat regulator or the well placed superior thermometer.

Two Oven Types

Some prefer the fresh air oven, which is an oven without the perforations in the side walls, on account of its uniform heat. Others like the direct heat oven in which the flame has almost direct access to the food in the oven, as being quicker; others prefer the older type which has the apertures on the side walls and allows some heat to come through to the food with the inevitable products of combustion as well. In the last two, though the cooking is a bit swifter, there is not the uniformity of cooking gained without moving or twisting the food, after it has been put in the oven. Yet

every one has his preference, and any of the above types made by good manufacturers will serve well and long, if used well.

In the fireless or heat regulated oven, you can cook a whole meal and then go away and leave it until it is done. So study your time card as soon as you get it, and you will get hints galore on how to save time and money.

The new ranges come with cooking charts, so that you need guess about nothing. On these are the temperatures and time lists for all kinds, sizes and conditions of food.

Some ovens have glass doors. We prefer the good old metal ones, for hot grease furrows glass unless it is washed off immediately. So don't feel "put upon" if the range you choose has no lovely looking glass doors.

And finally, gas is one of the cheapest fuels in point of convenience and actual money outlay for permanent cooking, and if you observe the simple saving graces, you will never be in any vicinity where gas will overburden your purse. For there is no fool like a fuel waster in all the realms of housekeeping.

The styles and sizes of the ranges are legion, and you can always adapt the size to the space in your kitchen. They are very good looking too, with their white enamels and black metal trimmings, their shelves and splashers

It is well to have the gas range connected by a flue, in order that waste gases or unburned gas can escape, should the fire be accidentally extinguished. In this way, the house is rid of noxious gases. Sometimes a damper in such a flue will give better control of draughts and irregularities of winds and atmospheric states.

Getting the Best

Poor gas ranges will cost more in the long run than good ones. If the burners are not of excellent construction, you will waste effort in getting them fixed, and you will waste gas and food ingredients in bad and uncertain cookery. Furthermore, you will be subjected to escaping gases and poisonous fumes which will never occur with the well made range. The burners should be no further from the top edge of your range than 1½ inches, otherwise, you will lose heat and lengthen the cooking periods and waste gas which means waste of money. And so it goes, ad infinitum. The best ranges or none, for the best will save you time, money and labor.

Whether you have natural gas or manufactured gas, there is never any need to be burdened with sooty utensils, if your burners are right and if you have the correct range which can look out for all pressures in the natural gas area.

So buy the best, and use the utensils that help you conserve heat rather than waste it. Your gas, or any other fuel comfort, depends on the amount of grey matter you use as a daily and hourly admixture.

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President Klumpp has recently been elected an Honorary Member of the Societe Technique de l'Industrie du Gaz en France and of the Institution of Gas Engineers of Great Britain.

Utility Courses at Temple University, Philadelphia

SUPPLEMENTING the previous announcement regarding the utility courses to be given under the auspices of the Pennsylvania Public Service Information Committee, it is now practicable to give information regarding these courses in more complete detail.

These courses cover the technical phases of the central station electric, manufactured gas, electric railway and telephone utilities, and a comprehensive course dealing with the general business and economics common to all utilities. These courses are all given in lecture form, competent operators and executives having been obtained as lecturers.

Of particular interest to the gas industry is the course covering that field and general course. The outline of the former course and lectures is subjoined:

Course in Gas Engineering

1. Coal Gas; horizontal retorts.	J. van G. Postles
2. Coal Gas; vertical retorts.	J. van G. Postles
3. Coke Ovens.	J. K. Mawha
4. Blue Gas and Boiler Plant.	L. B. Eichengreen
5. Carburetted water gas.	L. B. Eichengreen
6. Purification, Scrubbing and Condensing.	A. F. Kunberger
7. By-products.	A. F. Kunberger
8. Station Meters, holders.	B. V. Pfeiffer
9. Distribution of Gas.	A. M. Boyd
10. Low pressure systems.	A. M. Boyd
11. High pressure systems.	A. M. Boyd
12. Consumers' Meters.	W. J. Castor
13. Appliances—combustion.	C. C. Winterstein
14. Testing of Gas, Calorimetry, etc.	E. J. Brady
15. Gas Standards.	C. E. Reinicker

The outline of the general course and lectures is subjoined:

Outline of General Course

1. General Talk.	P. H. Gadsden, Vice-President, The United Gas Improvement Company.
2. General Business Economics.	J. O. Keller, Prof. Industrial Engineering, Pennsylvania State College.
3. Public Utilities and Privately Owned Business Undertakings.	M. H. Aylesworth, Managing Director, National Electric Light Association.
4. Duties of Public Utilities; Rights of Public Utilities.	J. T. Hutchings, Vice-President, The United Gas Improvement Company.
5. Regulation by Public Service Commissions.	Alex. Forward, Secretary-Manager, American Gas Association.
6. The Corporate Organization of a Public Utility.	L. R. Dutton, Manager, Philadelphia Suburban Gas & Elec. Co.
7. Analysis of Balance Sheet and Income Statement.	*J. E. Zimmerman, Day and Zimmerman, Inc., Engineers.
8. The Financing of Public Utilities.	W. W. Bodine, Assistant to Gen. Mgr., The United Gas Improvement Co.
9. Methods of Obtaining Value.	C. J. Joyce, Counsel, Philadelphia Rapid Transit Co.
10. Valuations and Appraisals.	C. J. Joyce.
11. Rate of Return.	C. J. Joyce.
12. Rate Systems.	C. J. Russell, Vice-President, The Philadelphia Elec. Co.
13. The Uses to Which Revenue is Put.	W. H. Johnson, President, The Philadelphia Elec. Co.
14. Publicity and Public Relations.	P. C. Staples, Vice-President, The Bell Telephone Co. of Penna.
15. Importance of Employees in Development of Public Utilities.	A. A. Mitten, Supervisor of Industrial Relations, Philadelphia Rapid Transit Company.

*Tentative.

The courses will be practical and so designed as to prepare men for promotion and others to qualify for employment in the public utility industry. The lectures and instruction in gas, telephone, electric light and power, and street railways, will be given in parallel, from 7.30 to 8.30 p. m., Thursday evenings, for fifteen consecutive weeks. On the same evening, in the hour following, the course in general utilities, business and economics will be given.

That course will deal with the fundamental business problems and economics common to all utilities. It is intended not only for utility men but also for others interested in the industry. From 7.30 to 9.30 on Tuesday evenings a course in Law of Public Utilities will be given. It will cover thirty consecutive weeks.

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"HOME WAS NEVER LIKE THIS."
A cover from "The Plumbers' Trade Journal."

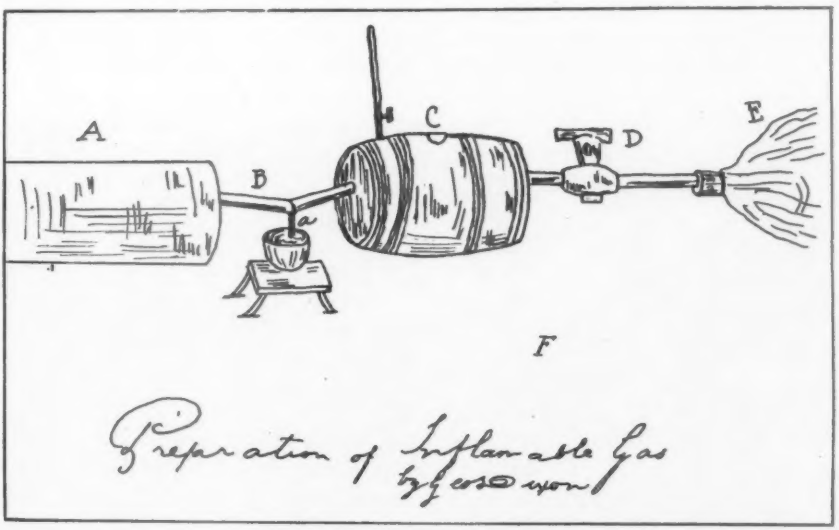
Dixon Versus Murdoch

HOW OLD IS THE GAS INDUSTRY? Credit for the invention of gas lighting is generally given to William Murdoch, who built the first steam locomotive for James Watt, and who, in 1792, made the first application of gas lighting in his home. Previous experiments, however, must be credited to George Dixon, of Cockfield, England, whose claims, based on a book written by his nephew, John Bailey, in 1810, are now brought forward by his descendant, Mr. Waynman Dixon, of Great Ayton, Yorkshire.

"I remember being much amused, when a little boy (aged 9)," Bailey wrote, "by George Dixon half filling an old teakettle with coal and setting it on the fire, and luting hemlock stems with clay to the spout....After a certain time he put the flame of a candle to the end of the farthest pipe, and immediately a bright flame issued from it, where nothing was visible before. This mode of lighting rooms was for a long time a favorite project with him, and he had thoughts of lighting his collieries with them."

Evidently the project was allowed to lapse, for it is not recorded that any practical use was ever made by Dixon of the new illuminating fuel. A further experiment of a more ambitious nature, of which the accompanying diagram was an illustration, was tried by Dixon as early as 1750.

"Wanting to know the quantity of tar produced by a ton of coals, he (Dixon) erected a furnace with a large cast-iron boiler, in which the coals were put. To this," according to Bailey's account, "were fixed two large cast-metal pump tubes; one of them was passed through water in order to condense the oil and tar, the end of this was filled by



An old sketch of Dixon's apparatus.

a wooden plug, with a hole to let out the tar, etc. Towards the end of the experiment he placed the flame of a candle to this hole; the inflammable gas immediately burned with a large flame, to extinguish which he struck it with his hat; the flame was driven inwards, the gas in the inside of the apparatus took fire as quickly as gunpowder, and exploded with a report like a cannon, driving out the wooden plug to a great distance, and exhibiting a cylindrical body of flame of several yards length."

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Wisconsin's Gas Equipped Tourist Camp

Where the gas hot plates are.

THE MENOMINEE and Marinette Light & Traction Company send us these two pictures of the Marinette Tourists' Camp at Marinette, Wis.

This probably is one of the most ideal tourists' camps in the United States, being equipped with electric lights, telephone, comfort station, hot water *heated by gas* and cooking facilities *using gas.*

Over three thousand people visited this camp between June 1st and August 1st and as an indication of the popularity of the gas service there generally was a line waiting to use the gas hot plates which are under the shelter shown in the smaller picture. As can be seen, this shelter also carries the sign telling visitors of the gas equipment available within.

This is a splendid method of popularizing gas service as well as of building up good will for the company supplying this service.

The entrance to the camp.

ACCOUNTING SECTION

W. A. SAUER, Chairman — H. C. DAVIDSON, Vice-Chairman

H. W. HARTMAN, Secretary

MANAGING COMMITTEE—1924

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CARROLL, H. P., Beaumont, Texas. (Southwestern)
CLINTON, DEWITT, Worcester, Mass. (N. E. Gas Eng.)
DOERING, W. A., Boston, Mass.
FREY, H. F., Allentown, Pa.
HAASE, EWALD, Milwaukee, Wis. (Wisconsin)
HALL, I. S., Boston, Mass.
HEINS, J. W., Philadelphia, Pa.
HOFFMAN, F. C., St. Paul, Minn.
JAMES, F. M., Aurora, Ill. (Illinois)
JAMES, W. H., Petersburg, Va. (Southern)
KELLER, A. R., Syracuse, N. Y.
KURTZ, ADAM, Detroit, Mich. (Michigan)
LAWALL, H. J., Philadelphia, Pa.
LAWRENCE, JAMES, New York, N. Y.
MEYERS, W. J., New York, N. Y.
MURFIT, W. C., Newton, Pa.
PAGE, HOMER, Charleston, S. C.
PATTERSON, F. H., Rochester, N. Y.
PETTES, W. H., Newark, N. J. (New Jersey)
PLATT, C. W., Portland, Ore. (Pacific Coast)
PORTER, EDWARD, Philadelphia, Pa. (Pennsylvania)
POTTER, C. F., Newark, N. J.
REESE, J. G., Baltimore, Md.
REYNOLDS, A. E., Springfield, Mo. (Missouri)
SCHMIDT, WM., JR., Baltimore, Md.
SCOBELL, E. C., Rochester, N. Y. (Empire State G. & E.)
SCOTT, J. M., Wilmington, Del.
SEARING, R. B., Sioux City, Ia. (Iowa)
SEARLE, A. A., New York, N. Y.
SHORT, A. F., Providence, R. I.
TOSSELL, A. L., Chicago, Ill.
TRACY, F. B., Muncie, Ind. (Indiana)
WILBUR, A. A., Brockton, Mass. (Gas Sales of N. E.)
WINTERS, A. C., Chicago, Ill.

CHAIRMEN OF SECTIONAL COMMITTEES ORGANIZED TO DATE

Analysis of Gas Company Statistics—H. J. LAWALL, Philadelphia, Pa.
Budget—F. H. PATTERSON, Rochester, N. Y.
Customers Accounting—H. J. FREY, Allentown, Pa.
Insurance—J. G. REESE, Baltimore, Md.
Nominating—J. W. HEINS, Philadelphia, Pa.
Relations With Customers—DEWITT CLINTON, Worcester, Mass.
Improving Relations Through Employees Visiting Customers' Premises—W. H. BARTON, Portland, Ore.
Errors, Their Correction and Prevention—J. M. ROBERTS, Chicago, Ill.
Security Holders' Records— E. MACMORRIS, Philadelphia, Pa.
Welfare Systems—O. F. POTTER, Newark, N. J.
State Representatives and Contributions to Monthly—A. L. TOSSELL, Chicago, Ill.
Uniform Classification of Accounts and Form of Annual Report to Public Service Commissions—W. J. MEYERS, New York, N. Y.

Analysis of Gas Company Statistics

H. J. LAWALL, Chairman, The United Gas Improvement Co., Philadelphia, Pa.

This is the preamble to the Committee's Report to be presented at the Sixth Annual Convention. (EDITOR'S NOTE.)

STATISTICS and their analysis as applied to gas companies is a subject entirely new to the Accounting Section of this Association. Your committee is the first one to be appointed to make a study of this very broad subject.

In recent years accounting and statistical work has received recognition as an aid to better management. This should be particularly gratifying to statisticians and accountants in the gas industry, as it was not many years ago that the so-called "bookkeeper" was hailed as a necessary nuisance, whereas today the well organized accounting and statistical department has demonstrated its value as an essential aid to the management in solving some of the very complex problems that come before it.

Statistics are constantly being compiled by gas companies throughout the country and it is questionable whether or not the management of the various units of the industry realizes the importance of using this available information to the fullest extent. Statistical

data does not mean very much unless it is properly interpreted and understood. Yardsticks of measurement may mean much or little to the management depending upon its knowledge of the use to which these yardsticks may be put. An example of what is meant in this connection is shown by the brief financial statement following, and how this statement lends itself to analysis from almost any angle.

The above financial statement, in spite of its brevity, is susceptible of an analysis which brings out the merits of the company as a going concern. If similar analyses are made of the statements for consecutive years, the trend of the company's condition can be clearly shown.

The first item of interest is the Operating Ratios, which are as follows:

Operating Expenses to Operating Revenues:

Total excluding Retirement Expense and Taxes	61.50%
Retirement Expense	6.02%
Taxes	7.10%
Total Operating Expenses	74.62%

In general, a gas property owning its own plant must have an operating ratio less than 80% in order to provide a satisfactory return on the investment. This per cent can be modified by the rate of turn-over of the company's capital as explained later, for if the company can turn over its investment once in two years instead of once in four years, the operating ratio can be increased with the same protection for the return.

If a gas company has a plant representing a relatively large investment, say a modern coal gas plant, the operating ratio must be less so as to leave more margin for the capital charges.

HYPOTHETICAL FINANCIAL STATEMENT OF A GAS COMPANY SET UP FOR PURPOSE OF ANALYSIS

Capital Stock		
7% Preferred	$1,250,000	
Common	2,500,000	
Total Stock		$3,750,000
Debt		
Bonds 5%	$4,800,000	
Notes and Other Debt	200,000	
Total Debt		$5,000,000
Grand Total Stock and Debt		$8,750,000
Operating Revenue		2,083,333
Operating Expenses		
Total Excluding Retirement Expense and Taxes	$1,281,250	
Retirement Expenses	125,417	
Taxes	147,917	
Total Operating Expenses		$1,554,584
Operating Income		$ 528,749
Non-operating Income		6,751
Gross Income		$ 535,500
Income Deductions		270,000
Net Income		$ 265,500
Dividends on Preferred Stock		87,500
Balance for Common Stock		$ 178,000

If two companies with the same plant conditions, processes, selling prices and business volume are being compared, the company with the lower operating ratio is the more efficient. In the present case, while the operating ratio is 74.62%, a normal figure, the company is not on "easy street," as will be explained further.

The next ratio refers to the relation of stock and debt to the operating revenue, which is as follows:—

Stock to Operating Revenue	1.80
Debt to Operating Revenue	2.40
Total Stock and Debt	4.20

It should be noted that this 4.20 is the reverse of turn-over, and means that 4.2 years are required to turn over the company's capital once. This amount is about normal for a gas company, 3 being a very good figure and 5 a dangerously high figure unless accompanied by a low operating ratio made possible by a low holder cost or other favorable conditions.

If 4.2 is divided into 100% minus the operating ratio (74.62%) or 25.38%, the result is 6.05%, which is the amount earned for return on the company's capital. If this capital is nearly equal to a fair rate making base for the company, then the rates are very low or the company is not operating efficiently. Most recent court decisions allow a return of 8% on the rate base, if the company is efficient, so it would pay the company whose statement is being analyzed here to determine its rate base and forecast changes in its capital costs and rates.

Using the above statement we find that the bond interest was earned 1.98 times and the preferred stock dividend 3.03 times, but the common stock, carrying most of the risk, shows only 7.12% return. These ratios show that a small amount of bonds and preferred stock can be issued to pay for betterments but there is no incentive for the common stockholders to invest more capital. If the 5% bonds are about to mature and have to be refunded on a 6% basis the income deductions will increase $48,000 and the bond interest will be earned only 1.68 times, the preferred dividends only 2.48 times, and the common stock return will be reduced to 5.2%. It is doubtful if this company could attract any new capital on this showing. The remedy, if the company is efficiently managed, is a higher rate in advance of new financing so that the earning statement will show the proper ratios before the securities are sold.

Additional details could be developed but the ratios illustrated above indicate the possibilities of analyzing company statistics. This same kind of analysis can be made of any company and the possibilities seem to be unlimited as to the story which unfolds by the simple use of certain yardsticks of measurement.

Cooperation with A. G. A. Headquarters on National Statistics

It is probable that all of the larger company organizations have had occasion to use statistics and that the more progressive of them have been sufficiently impressed with the importance of statistical information in the broadest sense of the term, to establish statistical departments for the orderly and continuous collection and interpretation of such data. Nevertheless, it is a fact that as an Association we have never given consideration to this very

important subject so far as it concerns the activities of the companies themselves, the character of the information which can and should be included, and the manner in which it may be most advantageously gathered and interpreted so as to be of maximum benefit both to the individual company and the industry as a whole.

It was therefore the opinion of the Managing Committee of the Accounting Section that statistics should be made the outstanding subject for consideration in this year's program and more particularly because the growing demand for statistical information by individual utility managements, by investment bankers, regulatory bodies, publicity departments and others makes it essential that the industry as a whole, rather than a few scattered companies, should be sold on the importance of statistics; and that coincidentally a decision should be reached as to the type of information, the segregation of which will be of most tangible assistance to the management in developing their individual situations and which may lend itself most readily to comparison with other situations or summarization as a means of tracing the development of the industry as a whole.

It was further the opinion of the Managing Committee that this work from its very nature could best be developed through the Accounting Section of the Association and accordingly the present committee was made up for this purpose, composed of representatives in charge of the statistical work of nineteen of the largest companies in the country. In submitting the present report the committee feels that it has merely scratched the surface and strongly urges that the Accounting Section maintain its activity in this work through a continuing committee which will not only study the statistical problem of the individual company but which will act as an advisory board to Association Headquarters in the gathering of national statistics and in replying to special statistical inquiries received at Headquarters.

Before proceeding to a brief statement of the information covered in the present report, the committee wishes to state that it has given considerable study to the problem which Association Headquarters is facing in supplying reliable and prompt statistical information relating to the industry as a whole; that it has had before it the annual statistical questionnaires of the American Gas Association, Brown's Directory of American Gas Companies, Moody's Manual, the questionnaire sent out every five years by the Bureau of Census, and the questionnaire sent out periodically by the U. S. Geological Survey. A very complete report on the A. G. A. questionnaire has been submitted by Mr. E. J. Tucker of the Toronto Company but the committee has decided to refrain from specific recommendations on all questionnaires until an opportunity for further study and development may be had, both as regards the type of data which companies can readily furnish and that which will be most adequate for reflecting the industry's growth.

The committee wishes to go on record, however, as to its sense of the importance to every gas company of cooperating fully with headquarters in its effort to see that all national statistics affecting the industry are correctly reported and in seeing that the individual data on which such statistics are based are submitted with sufficient promptness

to enable publication of the statistics in time to be of benefit for comparative purposes.

The committee wishes further to state that it considers this question of sufficient importance to recommend that consideration be given to the development of a statistical department at Association Headquarters which will not only handle the annual statistics heretofore published but will be available throughout the year for special statistical investigations on questions of importance to the industry; and that it is in cooperating in this work and in an effort (after further study), to simplify and coordinate the questionnaires submitted to the industry from all agencies, that the committee feels that the Accounting Section can be of maximum benefit in establishing an Advisory Committee such as proposed above.

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Students Visit Utility Plants

The easiest way to acquire knowledge concerning anything is the laboratory method of first hand observation, according to educators. These fifty summer session students at the University of Michigan took a "short course," at first hand, in modern utility plant operation when they inspected the Jackson, Mich., gas and electric plants of the Consumers Power Company, Aug. 2. Before the tour, they were guests of the company for luncheon. The trip, arranged by the Michigan Public Utility Information Bureau, is the third annual excursion to the company's Jackson plants.

This same method will be applied to the entire State of Michigan, Oct. 6 to 11—Public Utility Open House Week—when the utility companies of Michigan will invite their patrons to see just how gas and electricity are produced and distributed.

AN INVITATION TO ACCOUNTANTS

Meet your friends at the

ACCOUNTING SECTION EXHIBIT

Make your appointments with friends and business associates at Booths 195-196-205-206.

A lounging space has been provided for your convenience.

Open daily, 9 a. m. to 6 p. m.

Atlantic City **October 13-17, 1924**

Accounting Section Exhibit

THE EXHIBITION COMMITTEE of the Accounting Section have made plans to repeat this year the Accounting Section Exhibit on the Steel Pier which proved such a successful feature of the 1923 Convention. The same space has been secured for their exhibit as was provided last year, namely, booths No. 195, 196, 205 and 206.

Novel features will of course be provided for this year's Exhibits and gas company executives as well as accountants will be well repaid for a visit to these booths.

So far as the Committee's plans have taken shape there will be shown in the booths an exhibit which is designed to supplement the paper by Mr. Pettengill showing how gas companies can make extensive savings in their printing bills through standardization of printing and stationary. This exhibit will be planned by a man who has spent many years in the intensive study of this subject.

A comprehensive exhibit of a successful system of accounting used by one member company in connection with their customer ownership stock campaign will be of most timely interest to all gas men.

The latest adoptation of the system of "bookkeeping without books" as used by one of our smaller gas companies will introduce new angles on a subject which has occupied the attention of the gas accountant for the last three years.

The usual lounging space will be provided, where everyone is invided to meet his friends and discuss the exhibits in comfort. Boths will be opened every day from 9.00 a.m. to 6.00 p.m., and visitors will find at all times attendants who are competent to explain the different exhibits.

No visitor to the convention should miss this exhibit. It will be one of the features which will enable you to take home ideas that can be put to practical application in your own company.

State Representatives of Associations Affiliated with A. G. A.

Don't fail to attend the Exhibition Booths and see the map indicating these affiliated Associations, their territories and the names of their representatives.

Many of the latter will be with us. Locate them and give them your welcome and cooperation.

ACCOUNTING SECTION EXHIBIT

Every day, 9 a. m. to 6 p. m.

A. G. A. Annual Convention and Exhibition

Atlantic City **October 13-17, 1924**

PUBLICITY AND ADVERTISING SECTION

J. M. BENNETT, Chairman — F. L. BLANCHARD, Vice-Chairman
CHARLES W. PERSON, Secretary

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BORDEN, A. W., Hastings, Neb.
BURNS, J. J., St. Louis, Mo. (Missouri)
CLIFFORD, F. S., Fitchburg, Mass. (Gas Sales of N. E.)
COONEY, E. J., Lowell, Mass.
COOPER, STUART, Charleston, S. C. (Southern)
CRONE, F. W., New York, N. Y. (Empire State G. & E.)
DRURY, N. B., San Francisco, Calif. (Pacific Coast)
FENNIMAN, J. R., New York, N. Y.
FISHER, E. E., San Francisco, Calif.
FRANK, M. H., Fond du Lac, Wis.
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GOULD, WILLIAM, Boston, Mass. (N. E. Gas. Eng.)
GREEN, H. L., Waterloo, Ia. (Iowa)
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HAWES, A. W., JR., Baltimore, Md.
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ROLSTON, R. J., Philadelphia, Pa. (Pennsylvania)
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SOULES, E. E., Chicago, Ill.
STARR, L. K., Atlanta, Ga.
WATT, A. C., New York, N. Y.

CHAIRMEN OF SECTIONAL COMMITTEES ORGANIZED TO DATE

Contact With State Information Bureaus—J. S. S. RICHARDSON, Philadelphia, Pa.
Nominating—F. W. CRONE, New York, N. Y.

Who Is the Public?

HENRY OBERMEYER

"WE MUST protect our stockholders!" This phrase, like the deluge of Biblical times, has been made to cover a multitude of sins and sinners in the corporation history of the United States. No need to enlarge on that. Nine out of ten fairly well informed business men could mention a hundred examples, more or less, without drawing a breath.

It is a hackneyed phrase, a smile provoking slogan, doomed to inevitable death —except for one thing:

During the past five years—even during the past two years—a new public group has taken definite form. Inspired by Liberty Bond campaigns and Thrift Stamp drives, and now sustained and carried forward by the public utilities of the country, this new group, a group of small but discriminating investors, is making its voice heard. The group is still small—that is, comparatively small when placed beside the total number of gas consumers, for example—but it is learning how to protect its interests. It is demanding protection, not only from boards of directors, but also from the regulatory bodies of the state.

The manufactured gas industry is asking, and asking with reason:

"Who is our public?"

Mr. Jones says:

"I am the public! I buy your gas and pay for it. If I don't like your gas, or if I don't like your service, or if I don't like the way you charge me for your gas and your service—why, then I kick. And when I kick, I kick where it hurts. I kick to my neighbor, and my neighbor kicks to his neighbor, and when we get together we pass all our kicks up to the legislature, which passes them on to the commission, which passes them on to the courts. And you—you get what is vulgarly known as a good swift boot in the slats. I am the public!"

Mr. Brown says:

"I am the public! I make it possible for you to grow. I trust you with the money I have saved, and that my wife and sons have saved. I could have put it in the bank or in government bonds; but I didn't. I gave it to you, because you told me it would be safe, and that I ought to support the industries in my own community which give me heat and light and power. You have used my money to build new plants, to extend new lines of service, and in exchange for what I have loaned, you promise me an adequate return, a rental for my funds. I depend on your promise, because I am a man with a small salary and a growing family. If you fail me, it means more than just a few cents one way or the other on my gas bill. It means the loss of my livelihood, or enough of it at any rate to make me lower my entire standard of living. I have no advocate, either in the legislature or the courts. But, just the same, your obligation is to me. I am the public!"

And so, the gas company, torn this way and that, decides to make an investigation of its own. It sends for Mr. Jones.

"Mr. Jones," says the gas company, "we hear a lot about our obligation to the public. We have an obligation. We admit it. In fact, we will even go further and say that our entire business is founded on an obligation to the public. Good! But see here—see here, Mr. Jones, we want to know just one thing. Whoinell *is* the public anyhow?"

"I am the public!" says Mr. Jones.

"No," the gas company shakes its head. "That won't do at all. We'll have to send for Mr. Brown."

The office boy announces Mr. Brown.

The gas company looks up, blinks once or twice, and puts on its spectacles.

"What are you doing back here?" it demands. "You're not Mr. Brown."

"I'm Mr. Brown," says the visitor.

"But a few minutes ago you said you were Mr. Jones," the gas company objects.

"I was Mr. Jones."

"But that can't be. Mr. Jones said he was the public."

Really, it seems as if the gas company has him there. But, no—

"I am the public!" says the visitor, and all at once the room seems full of Browns and Joneses, all very red in the face and shouting at each other: "I am the public!"

Alice in Wonderland was never faced with a more puzzling dilemma.

The dilemma is increasing, for the number of customer owners of America's gas companies is multiplying at an astounding rate. Customer ownership is a development of the past four or five years only; yet, during that period, nearly half a million persons have invested in gas company securities; that is to say, about six per cent of the total number of gas meters in the country .

The increase in gas company investors since the customer ownership idea was taken seriously—say, 1920—has been more than 600 per cent, and probably 1,000 per cent would be nearer the facts. Compared with this, the amount of gas consumed increased only about 15½ per cent.

Putting it another way, and erring consciously on the side of conservatism, we get results of even greater significance. The best information we have at hand indicates that the average investor in gas company securities owns about five shares of stock, common or preferred, and perhaps $1,000 worth of bonds. On his stock he receives, let us say, an annual return of $7 per share;

on his investment bonds, about five per cent, or $50.

Multiply this by 500,000, the estimated total of customer owners of gas company securities, and you will get an annual dividend check of $17,500,000, and an annual interest check of $25,000,000, or a grand total income of $42,500,000.

This figure represents nearly 20 per cent of the annual domestic cooking and heating bill of the country.

In other words, if the holdings of customer owners were actually equalized, nearly a fifth of our gas consumers would be in a position to pay all of their cooking and gas heating bills with the dividends and interest from their gas company securities.

Now, this is only an hypothesis; but we do not believe it is an over-statement. The point to be emphasized is that the customer-ownership idea is only in its infancy, and that it is growing many times more rapidly even than the gas industry, which itself is believed to have barely scratched the surface of its possibilities.

Mr. Frank LeRoy Blanchard, speaking before the Public Utilities Advertising Association at the recent London convention of the Associated Advertising Clubs of the World, called our attention to the fact that in 1920 approximately $35,000,000 of public utility securities of all classes were placed in the hands of customers; in 1921, $80,000,000 in 1922, $175,000,000; and in 1923, $250,000,000.

Taking gas securities alone, during the last eight months of 1923, 187 of the country's leading gas companies, together with a few combined gas and electric companies, sold 1,251,640 shares of stock to 227,170 investors. At that rate, our total estimate of 500,000 investors in gas company securities at the present time is seen to be anything but exaggerated. Using these figures, our estimate of five shares to a person is also under rather than above the average.

Gas manufacturers, public service commissions and others interested in the future of the gas industry all hail this new tendency as the beginning of a new era of mutual understanding and responsibility between the public and the gas company. "Understanding" is a desirable aim. "Responsibility" is a better. Both the gas companies *and the public* must appreciate the reasons for this particular kind of responsibility, which is *in addition to* the responsibilty which attaches to the giving of continuous and efficient service.

"It must be remembered," says Mr. F. A. Newton, "that the utility is incurring a most serious obligation to these investors. It is the absolute and unqualified duty of the utility to take every step possible to protect their investment, and, as I see it, it is the duty and obligation of the public, through its agency, the Commission, to do likewise. The obligations of the public and the company are mutual. In other words, here (in the field of customer ownership) is an added obligation to maintain the regularity of our earnings, and if a proper contingency reserve will do this, if nothing else, it is fully justified."

It is, after, all, a question of good faith and business ethics, as H. M. Addinsell of the New York financial house of Harris, Forbes & Company, amply testifies. Public utilities, because of their constant and intimate contact with the daily life of almost every citizen in the community, are in a uniquely favorable position to dispose of their securities directly to the public.

"It should be borne in mind," says Mr. Addinsell, "that in undertaking the di-

rect sale of its own securities, a company assumes certain duties and obligations toward the purchasers of those securities. These purchasers, it must be remembered, are mostly people of comparatively small means who are not accustomed to scrutinize carefully or judge the merits of investment obligations. To them, the utility company has always seemed a financial pillar of strength. The stock which a company expects to market direct should be issued under the same conservative restrictions which would be demanded if the issue were to be made through investment bankers; it should bear a conservative relation to the investment in the property and the earnings and the price should be in line with current quotations for securities of a similar class.

"Granting that these obligations are observed—and I do not hesitate to say that in the almost overwhelming majority of cases they are observed most scrupulously—the customer ownership campaign among the utilities is a great, constructive and a unique power for the welfare of the community. In the first place, money so raised goes toward improving the facilities which render essential services to the community. An opportunity is offered to individuals in the community of investing their surplus funds in stable and established businesses at very attractive returns, and this opportunity is extended, moreover, to the individual whose surplus available for investment is not sufficiently large to make standard channels of investment open to him, and who has, consequently, in the past, too often been left to the tender mercies of the blue sky operators. The service to the community at large of bringing these individually small, but in the aggregate enormous, sums into the national reservoirs of capital is in itself no small service to the community."

As a matter of fact, with the exception of the remarkable development and expansion which is going on in the gas industry today, many people look on customer ownership as the most significant current tendency in the business.

Customer ownership as well as public relations work in general was made necessary originally as a matter of self defense because of the natural public reaction to a certain highhanded attitude on the part of some corporations, which was best expressed by the philosophy of Commodore Vanderbilt who may, or may not, have said, "The public be damned."

In attacking and dissipating this sort of philosophy, the public utilities have gone ahead of other types of business, and are actually putting the ownership of their corporations into the hands of the very same public which was once "damned" by men of the Vanderbilt point of view, as a recent editorial in the Hutchinson (Kansas) Gazette, entitled "Reversing the Commodore," reminds us.

"Good 7 per cent stuff that would be grabbed up in big blocks if it was offered in the money centers," says the writer, "is parcelled out a few hundred dollars in a lump in the territory where the corporation gets its revenue.

"These various stock campaigns are a good thing for a community. They provide money for a utility where it is needed, encourage thrift, and furnish safe investment for those who have only a limited amount of capital to invest."

Safe investment for those who have only a limited amount of capital to invest! It is worth repeating. It contains the whole philosophy and theory of customer ownership as far as the investor is concerned. It expresses in a phrase

the fact that gas companies who have embarked on this field of financing are obligated to a new public and in a new way.

Of course, it isn't a new public at all, but the same consumer who, when he makes it difficult for the gas company to earn a fair return, finds himself in the anomalous position of biting (off) the hand that feeds him. Confronted with a situation, he scarcely knows which leg to stand on. He kicks when rates go up, and he kicks when stocks go down.

The gas company, however, can do much to enlighten him as to his true standing; to help him realize, through education and personal experience, that a fair rate is not necessarily an exorbitant one, and that capital, whether privately or publicly owned, cannot live without a certain minimum of sustenance.

No one need fear that customer ownership is going to lead to exorbitant charges for gas. The great majority of customer owners are holders of preferred, not capital, stock, and their return on the investment does not fluctuate with the earnings of the company. What they are after is safety, and they will help the company to meet its obligations as far as it is necessary. No further is expected.

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Woman's Work and Her Workshop

A DOMESTIC ENGINEER for the domestic workshop is urgently needed by the average gas company, according to Miss M. A. Trench, an English gas woman, who spoke recently before a meeting of gas salesmen on the other side of the water. Her talk, quoted in the *Gas World*, contains some material which might be of suggestive value to gas companies in the United States.

By the domestic workshop, of course, she means the kitchen. A "domestic engineer" would be a woman to advise architects, plumbers, home builders and possibly even appliance manufacturers, on installations of gas from the woman's point of view.

"Nine women out of ten, when they choose a cooker, ask for one that is easy to clean," says Miss Trench. "The more easily it is cleaned, the more it will be used. They have no time to blacklead; they do not want bright parts that must be constantly polished or rust; and the more enamel there is to be quickly washed the better.

"A woman's idea is very different from a man's with regard to cookers. The man pays the gas bills, and when he thinks of improvements, turns his mind to efficient burners, so that the bills may be less. Money is just as important to a woman, for though she may not go out and earn it, she can either save or waste it. With efficient burners she may save about 3d. per day, or 1s. 9d. per week; but if she can save time she can save much more than that. In one evening she can make a simple dress and save perhaps 10s. She can make clothes for the children, knit socks and jumpers, and, because each article can be different, the work gives her interest.

"The less a man hears of the domestic workshop, the better he is pleased, and no man wants to know too much of a woman's point of view, for it generally costs too much money. The workshops

of both men and women are designed by men, for men are the architects and builders, and, from a woman's point of view it seems rather funny that in the last hundred years, men for men have made so many changes, and men for women—so few.

"Take a factory, for which at one time any sort of building would do. Now the building must be suitable for its purpose; there must be light, air, ventilation, warmth; the owner provides up-to-date machinery and tools, so that as many jobs may be done in as short a time as possible; then the men's union says they must only work a stipulated number of hours; and finally everyone agrees that because machinery does a great part of the work, it is essential that men should have recreation and amusements, so that their brains may not be dulled by the monotony of the work.

"Yet the wives of those men are, in the majority of cases, still working in similar workshops to their mothers and grandmothers, and because help is more difficult to obtain, and because of the shortage of houses, many women are even worse off today, and do their work in rooms that are also sitting rooms and bedrooms.

"Why is it that conditions have improved for men and change so slowly for women? Because there are so many of us—a million superfluous women at the end of the war—so that if a man kills off one wife because she has too much to do, it is the easiest thing in the world to get another!

"In the Colonies, where women are scarce, conditions are different. If a woman is ill in Canada, there is no other woman to do her work. It falls to the man, and when he sees what it is like and where the difficulties come in, he soon finds remedies. The great drawback in England is that men never do a woman's work; and though they try to bring improvements, they sometimes miss the mark, and do not find what a woman needs most.

"Houses that are already built must be treated individually, but as new houses go up, they can be planned with a special view to saving time and lessening the monotonous drudgery of housework. These houses will last for more than one generation of women, and it will be false economy to put in them apparatus with which women of today can manage, but that women ten years hence will scrap. Education must advance, and never again shall we find a class of women who could neither read nor write, and for whom there was no opening but domestic work.

"What a good thing that we shall never go back to that state of things! As time goes on, women will take less and less to domestic work, unless it compares favorably with other openings, and it can only do so if the drudgery is cut down to a minimum, and proper workshops and tools provided."

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Note

The Home Service Exhibit has been changed from Booths 218, 219 and 220 to the Solarium, located at the entrance to the Convention Hall at the ocean end of the Steel Pier.

MANUFACTURERS SECTION

G. W. PARKER, Chairman — E. E. BASQUIN, Vice-Chairman

C. W. BERGHORN, Jr., Secretary

MANAGING COMMITTEE—1924

AARON, C. T., Boston, Mass.
ABBOTT, M. E., Taunton, Mass. (Gas Sales of N. E.)
BARTLETT, C. E., Philadelphia, Pa. (New Jersey)
CRANE, W. M., New York, N. Y.
DEHART, J. S., JR., Newark, N. J.
FAIRCHILD, S. E., JR., Ambler, Pa.
FOWLER, W. M., Philadelphia, Pa.
GRADY, S., Philadelphia, Pa. (Pennsylvania)
GREENE, J. J., New York, N. Y.
HOBBS, C., Toronto, Ont., Canada. (Canadian)
KING, T., Pittsburgh, Pa.
MCCULLOUGH, CHARLES, Milwaukee, Wis. (Wisconsin)
MCDONALD, DONALD, New York, N. Y.
MCILHENNY, J. D., JR., Philadelphia, Pa.
NORMAN, E. A., New York, N. Y.
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PARKER, JOHN F., Rockford, Ill. (Indiana)
RAMSBURG, C. J., Pittsburgh, Pa.
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SMITH, W. L., Battle Creek, Mich. (Michigan)
STITES, TOWNSEND, Gloucester, N. J.
STOCKSTROM, A., St. Louis, Mo. (Missouri)
WHETSTONE, W., Philadelphia, Pa.
WILSON, H. A., Newark, N. J.
WOLFE, A. MCW., Baltimore, Md. (Southern)

CHAIRMEN OF SECTIONAL COMMITTEES ORGANIZED TO DATE

Exhibition—GEO. W. PARKER, St. Louis, Mo.
Nominating—F. A. LEMKE, Kalamazoo, Mich.
Division of Accessories Manufacturers—H. A. WILSON, Newark, N. J.
Division of Apparatus & Works Manufacturers—S. F. FAIRCHILD, Ambler, Pa.
Division of Gas Range Manufacturers—CHAS. T. AARON, Boston, Mass.
Division of Heating Appliance Manufacturers—THOMSON KING, Pittsburgh, Pa.
Division of Industrial Appliance Manufacturers—WALTER WHETSTONE, Philadelphia, Pa.
Division of Lighting Appliance Manufacturers—TOWNSEND STITES, Gloucester, N. J.
Division of Meter Manufacturers— J. D. MCILHENNY, JR., Philadelphia, Pa.
Division of Office Labor Saving Devices—E. A. NORMAN, New York, N. Y.
Division of Water Heater Manufacturers—W. M FOWLER, Philadelphia, Pa.
Division of Supply Manufacturers—J. J. GREENE, New York, N. Y.

Why Gas Companies Should Continue to Sell Gas Appliances

Another Opinion From The Pacific Coast

JOHN H. HARTOG, Sales Manager, Portland Gas & Coke Company, Portland, Oregon.

SHOULD A GAS COMPANY sell appliances or should this be left to the dealers? There is quite a difference of opinion and naturally so for the dealers are not impartial and are apt to have a warped view.

The first method is where the gas company monopolizes the appliance business. This creates antagonism on the part of the dealers in appliances which is hard to eradicate in time to come. It is unwise and short-sighted, for the more dealers the gas company can persuade to sell good gas appliances the better of course for the company. On the other hand, the more dealers the gas company antagonizes the more ill-will they create.

The second method is for the appliance dealers to monopolize the business and the gas company to sit supinely by, afraid to make a move for fear of antagonizing the dealers. This is equally short-sighted and unwise. If the gas company is a "fair" competitor, and there is no reason why it should not be, what difference can it possibly make whether the gas company or some other company does the competing. As a matter of fact if the gas company is run along high-minded lines, its competition will be much less to be feared than that of another dealer.

The U. S. Constitution grants every man the privilege of pursuing his own

happiness but some of the gas appliance dealers would disfranchise the utilities and not permit them to do business in the way they feel it is for their best interest.

Some of the appliance dealers, a very few of them, are gas men to a lesser or greater extent but the majority of them are not, and it goes without saying that such dealers are not interested so much in the future of the gas industry as they are in making a living. "Where your treasure is, there will your heart be also" holds good with all of us and appliance dealers, even though they may be gas men, are nevertheless dealers first, last and all the time.

The peculiar and unhappy results of this method of allowing the dealers to monopolize the appliance business is that all kinds of inefficient and unsatisfactory appliances are put on the market and the gas company seems to have very little to say about it. There are many instances where such appliances have been allowed to go into the homes only to be thrown out later, and in many cases created a false impression about our wonderful fuel which no argument can ever eradicate.

If this is true, and I am sure I am stating facts and know whereof I speak, then it will have to be admitted that this method of letting the dealers run the show is the wrong one.

The third, and only right way, is for the gas company to sell the very best appliances that are obtainable. Not to sell them at a price where the dealer cannot make a living, but on the other hand to be higher, if anything, than the dealer in order to give the merchant every possible encouragement.

The idea is this: that the gas company can afford to advertise gas appliances daily, which is something that the dealers, as a rule, cannot very well afford to do, out of their profits. In many cases the gas companies advertise gas ranges without mentioning any brand at all, as witness for instance some of the billboards and display advertisements, some of which have been given space in the monthly gas journals.

The gas company generally is better able financially to carry on a line of advertising than would be the dealer; and the utility, if managed along up-to-date lines, is constantly on the qui vive for improvements, inventions and discoveries both as to the usage and installation. It would be impossible for any dealer to afford the expense of a laboratory research department such as a modern utility maintains. He has enough to do running his retail business without worrying about the experimenting and research which mean so much to the gas industry.

That the selling of gas appliances by the gas company antagonizes the merchant is without foundation in fact, for many instances exist where the relations between the dealers, the plumbers, the heating contractors and the utility supplying the fuel are friendly and cooperative.

While it is *sine qua non* that the gas company should not deprive the dealer of his profit, it is also a fact that a well managed gas company will go out of its way to educate some of the smaller dealers to the necessity of figuring the right overhead and not to imagine that his own labor is not worth anything if he installs the appliance himself.

As in other lines of merchandise some one house stands out as the leader and is eagerly looked up to for its verdict as to what is correct and efficient. So the gas company, proud of its product, should be the outstanding leader, always in the forefront, recommending improvements as well as condemning inefficient appliances. Thus the gas company

would be of tremendous help to those dealers who are interested in selling satisfactory merchandise as well as in the direct profits.

The display of the appliances which the gas company has investigated and passed upon as safe and efficient would be a criterion for the buyers including those who prefer to patronize their friends or stores with whom they regularly deal.

The example thus set by the gas company is of inestimable value, even indirectly, towards including the dealers to carry good appliances. If they do not, the shortcoming is readily noticeable by those who shop around and whose mind and desires are educated to the proper level by the efforts of the gas company.

It is a mistake to confound the interest of the gas company as such with those of the dealer. The gas company sells appliances as a means to an end, while the dealer sells appliances to make money and the gas fuel is only indirectly a matter of concern to him and especially to his salesmen. It is a well known fact that when a dealer sells an inefficient, unsatisfactory appliance the customer generally blames the quality of the gas and generally the salesmen either acquiesces in this opinion or originates the accusation himself.

It is ridiculous to assert that gas companies cannot employ men of ability just as well as the merchant can. A man who is a success in business for himself certainly does not lose his ability when he is engaged by the gas company to take charge of its merchandise department.

Nor is it correct to assume that the dealers are just as able to finance the appliance sales as is the gas company. Experience contradicts this. In some instances the gas company may even have to purchase contracts from the smaller dealers in order to enable them to sell on as easy terms as offered by the gas company, especially during certain campaigns.

For the last 25 years the tendency in business has been toward the elimination of the middle-man. Originally it was one of the big oil concerns in this country which demonstrated the fact that they could sell at less money, make more profit, do a larger business and give better service by dealing directly with the consumer than they could through the customary middle-man and dealers. The dealers strenuously objected, and the writer was one of them, but the verdict was pronounced and, arbitrary though it was, the sentence was enforced. Gradually other concerns commenced to follow suit, as for instance one of the large tobacco concerns, until today it has become a well established fact. And in the gas business the appliances and their operation and efficiency are so closely interwoven with the success and prominence of the gas industry that it is absolutely necessary for the utility, as a matter of self-protection, to not only remain in the business but to be the leader, without, however, antagonizing its friends and co-workers—the dealers.

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Scientifically Designed Containers Make Saving for One Company

The following is a letter from E. P. Bailey, Jr., President of the Bryant Heater & Mfg. Company, addressed to the Managing Committee of the Manufacturers' Section. (EDITOR'S NOTE.)

YOUR CHAIRMAN suggested that I put in writing some remarks I made on the experience of our firm with the service extended by the Forest Products Laboratory.

This service was first brought to our attention through an address entitled: "Container Investigations at the Forest Products Laboratory," delivered before the Manufacturers' Section of the A. G. A. in October, 1923, by Mr. C. A. Plaskett of the U. S. Department of Agriculture. The talk was supplemented by motion pictures which illustrated some of the testing methods and demonstrated the superior qualities of scientifically designed containers. Mr. Plaskett extended an invitation to manufacturers to use the laboratory to help solve problems of crating and packing.

It was the good fortune of our company to accept that invitation. After preliminary negotiations, we shipped samples of crated material to the Laboratory at Madison, Wisconsin; the superintendent in charge of our shipping department went to the laboratory to attend a one week's course in crating and packing (a regular curriculum feature) and to be present during the testing of our containers.

As a result of the tests, several suggestions were made for improving our crating; we adopted these suggestions, and as a result, have materially decreased breakage from shipping and handling.

The entire expense of acquiring the information (including fees, freight, material used, railroad fare and hotel charges) amounted to approximately four hundred dollars. It is no exaggeration to say that we would not part with the knowledge we obtained for many times that sum.

It is a pleasure to have this opportunity to express our appreciation of the service we have received; we can unhesitatingly recommend it to any company that is not absolutely satisfied that it possesses all possible knowledge of this subject and its importance.

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House-Heating Book Well Liked

We have received the following letter from W. M. Henderson, Secretary of the Pacific Coast Gas Association:—

> "We received in the mail a copy of "House Heating Book" issued by the Association.
>
> "We have had an opportunity to read same and find it very interesting, as well as containing much of value. It is about the most complete information on the subject that I have had the opportunity to look over, and I wish to congratulate those who have produced the copy, on the good work they have done."

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In Memoriam

Alexander H. Strecker, Public Service Electric & Gas Co., Newark, N. J.
J. W. Graham, Gen. Mgr., Kitson Company, Philadelphia, Pa.
John H. Keppelman, Pres., Consumers Gas Co., Reading, Pa.
Arthur S. Huey, Vice-Pres., Byllesby Eng. & Mgnt. Corp., Chicago, Ill.
Wm. McCleary, Mgr., Freeport Gas Co., Freeport, Ill.
W. G. Dorr, Supt. Gas Dstbn., Los Angeles Gas & Electric Corp., Los Angeles, Calif.
Henry W. Douglas, Gen. Mgr., Washtenaw Gas Co., Ann Arbor, Mich.

INDUSTRIAL GAS SECTION

H. H. CLARK, Chairman — H. O. LOEBELL, Vice-Chairman

C. W. BERGHORN, Jr., Secretary

MANAGING COMMITTEE—1924

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ANDREW, H. O., New York, N. Y.
BROUGHTON, H. E., Jackson, Mich. (Michigan)
CAULEY, F. F., Chicago, Ill.
CLARK, H. H., Chicago, Ill. (Illinois)
CRAWFORD, H. M., San Francisco, Cal.
DE CORIOLIS, E. G., Boston, Mass.
GALBRAITH, L. F., Oakland, Cal. (Pacific Coast)
HARDING, D. J., York, Pa. (Pennsylvania)
HENRY, H. M., Pittsburgh, Pa.
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HOLMAN, H. B., St. Louis, Mo.
KELLY, T. J., Fort Wayne, Ind. (Indiana)
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LAFORE, P. J., Boston, Mass.
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OSTERMAN, P. C., Elizabeth, N. J.
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RAMSAY, R. E., Philadelphia, Pa.
RASCH, W. T., New York, N. Y.
SCHUETZ, A. A., Milwaukee, Wis. (Wisconsin)
SELLMAN, N. T., New York, N. Y.
SLIMPIN, C. D., Montreal, Can. (Canadian)
STAHL, C. R., Davenport, Ia. (Iowa)
STEPHANY, E. J., Pittsburgh, Pa.
THOMPSON, W. D., Hammond, Ind.
VITTINGHOFF, H., Boston, Mass.
WATSON, H. E. G., Toronto, Can.
YEATON, G. D., Providence, R. I. (Gas Sales of N. E.)
YOUNG, A. W., Knoxville, Tenn. (Southern)
YOUNG, R. R., Newark, N. J. (New Jersey)

CHAIRMEN OF SECTIONAL COMMITTEES ORGANIZED TO DATE

Convention Program—F. F. CAULEY, Chicago, Ill.
Cooperation with "Industrial Gas"—N. T. SELLMAN, New York, N. Y.
Educational—R. R. YOUNG, Newark, N. J.
Industrial Booklets—
Combustion—H. O. LOEBELL, New York, N. Y.
Hotel & Restaurant Uses—J. P. LEINROTH, Newark, N. J.
House Heating—E. D. MILENER, Baltimore, Md.
Large Volume Water Heating—W. T. RASCH, New York, N. Y.
Steam Boilers—H. VITTINGHOFF, Boston, Mass.
Wholesale Baking—H. M. HENRY, Pittsburgh, Pa.
1000 Uses for Gas—H. H. CLARK, Chicago, Ill.
Ceramics—C. C. KRAUSSE, Baltimore, Md.
Drying—J. ZANDOR, Chicago, Ill.
Food Products—E. J. STEPHANY, Pittsburgh, Pa.
Forging & Heat Treating—W. D. THOMPSON, Hammond, Ind.
Soft Metal Melting—W. M. HEPBURN, New York, N. Y.
Tank Heating—OSCAR BOWEN, Chicago, Ill.
Nominating—F. F. CAULEY, Chicago, Ill.

The Economical Use of Gas in Cracker Bakeries*

HALL M. HENRY, Combustion Utilities Corp., New York, N. Y.

THE FACT THAT you have invited a gas man to talk with you, is in keeping with the progressive spirit shown by you in doing everything possible to improve the quality of your product and lowering the cost of producing that quality product as you most assuredly have done by establishing your Research Departments to investigate the why and wherefore of Cracker Making, and in installing automatic machinery for mixing your doughs to give homogeneity, and conveying machinery, etc., to eliminate labor. After all is said and done, however, a first quality product cannot be called such until that product has gone through all the varied stages and is ready for consumption, as in the case of crackers and biscuits, or ready to be placed in operation, as in the case of a gear in the transmission of an automobile.

Let us consider for a moment the gear used in the automobile; at one time the automobile manufacturer thought he had done everything possible to improve his product when he had bought a steel which he knew contained the necessary constituents like nickel and chromium to give him the strength and wearing properties he desired. He found, however, after exhaustive tests that it was possible by proper heat treatment to produce as fine a gear with the steel he had been using

*A paper delivered before the 24th Annual Convention of The Biscuit and Cracker Manufacturers' Association of America.

as with the new steel which was improperly treated.

Heat Regulation Enters

The manufacturer realized, however, that he should obtain a better gear from the higher grade steel, so he set about to find out why he did not; as a result he found that the high grade steel had critical temperatures different from the steel he had been using and that the temperature at which the steel should be heated must be regulated within a very close range. To regulate and maintain this temperature within close limits required a fuel which could be easily controlled; as a result the automobile manufacturer had to turn to some other fuel than coal or oil. The only two fuels available were electricity or gas, so today we find one or the other of these fuels in all delicate heating operations.

So it is with you today; you have expended a lot of money on research into the chemistry of cracker and biscuit making, and the essential ingredients to produce a first quality product. You even went further than this and determined why you could not obtain consistent results with apparently the same grade of flour and other ingredients. You found that the seasoning of the flour affected the quality of product, the temperature and humidity of the mixing room, improper mixing, etc., so you devised means to overcome all of these factors. However, in a majority of cases you have continued to use the same coal, coke or oil fired oven that you have always used, taking it for granted that the baking, so long as a fairly good-looking product was obtained, was all that could be desired.

However, just as in the case of the automobile man, who found that proper heat treating was just as essential to a first quality product as proper steel to begin with, so it is with you. You, too, realize that proper baking is necessary to obtain the best results irrespective of the character of the ingredients used in making the goods themselves. The importance of proper baking is evidenced by articles appearing in recent issues of *Bakers' Review and Bakers' Weekly.*

What Does This Mean?

It means that if you want to be assured of a uniform product of first class quality you must have your oven temperature and oven atmosphere under control. I mention atmosphere here because as you know in the baking of ginger snaps and other goods you must have steam in your oven aside from maintaining a given temperature. Now the question naturally arises as to what part gas plays in all of this and just why it is so much better than any of the other fuels.

It is not necessary for me to tell you that accurate control of the temperature of your ovens with coal or coke firing is impossible, you know it already. With gas you need not worry about the oven temperature being right. If you find it desirable to have your goods held at one temperature for a certain period then at another temperature either higher or lower than the first one, and so on, you can do so. In other words, you can produce any kind of temperature in your oven that you desire and be sure of getting this temperature when gas is the fuel.

Furthermore, with gas it is possible to make the control feature absolutely automatic so that you do not have to depend on the operator. Something impossible with coal or coke.

Thus we score Point One for gas.

Uniform Temperature

Uniform temperature is probably the most important of all in regard to the

part the fuel plays in the production of a first quality product. I could give you reasons *why* gas can be closely and accurately controlled and coal and coke cannot, but to do so would only prolong the reading of this paper and add nothing to its value, for you know from your experience with gas in your own home if not elsewhere that close temperature control and flexibility are cardinal features of a gaseous fuel.

Another point in favor of gas over the other fuels is its *cleanliness.* You know, as well as anyone else, that dirt, grime, dust and ashes have no place in the establishment where goods are cooked and prepared for human consumption.

Other Reasons

But in addition to these there are a number of other reasons why gas should be used, so that a few of those which are more prominent will be listed.

1. Gas is a flexible fuel.

2. It is delivered to the oven with no effort on the part of the user.

3. It is paid for after it is used. All other fuels have to be bought and paid for in advance.

4. The supply of gas is unlimited. It is sold by a public utility which gets a priority order if there is a coal strike. The baker using other fuels may get his —and he may not.

5. The price is practically non-fluctuating. The baker can pretty nearly tell what his monthly bill will run.

6. Gas, when burned, provides the necessary water to hydrolize the outside of the product to form an even crust with perfect bloom, color and crispness.

7. Gas is always ready when the baker is. It normally takes less than an hour from the time a properly designed bake oven is lit until it is ready to bake. When the day's work is over, so is the fuel bill for that day.

8. Spoilage is next to impossible with gas. The temperature will not vary unless you make it do so.

9. The effect of not having to think about the fuel lightens worries. No worry means better work.

10. A gas oven of the right kind means greater speed. The more batches that can be turned out in short time, the cheaper each batch will be. Time is money.

11. The baker who uses gas and who has no dirt and ashes is happy to show his bakery to the public. He can advertise the fact and make capital of it.

12. The floor space occupied by an efficiently built gas oven is but a fraction of that required for one using solid or liquid fuel.

13. A gas oven, if made right, can be installed on any floor and in any building.

The Cost Analysis

You may say, this is all very well, but gas is too expensive. To consider gas expensive is one of the popular fallacies brought about by lack of going into the real basic figures, including greater output, time and labor saved in making coal fires, cost of carrying coal and ashes, saving in spoiled goods, floor space, painting charges, and numerous other savings.

When you come to consider the application of gas or any other fuel, analyze your costs, find out how much each individual item amounts to, and what the cost is due to, make a study of the fuels available and determine if the substitution of one of them will improve your product and decrease your unit cost. In considering a change of fuel do not fail to consider the extra advantages to be gained by an entirely new installation instead of adapting the new fuel to the present equipment. You will doubtlessly find out that the new equipment, aside

from overcoming all of your present troubles, may give you added advantages worth many times the extra cost for new equipment.

Let us, for example, analyze some of the costs in baking. Possibly the first one you think of is fuel cost, yet it is probably the least item of all, irrespective of the price you pay for the fuel. I say irrespective, because today the price of the fuel, no matter whether you pay 50 cents or $2 per thousand for gas—or $7 to $15 per ton, for coal or coke, is the least item of all entering into the cost of your product. Naturally the cost will be greater in all cases where the same fuel is used at a larger cost per unit, but this cost is such a small proportion of the total cost of all other items entering into the cost of your baked products that it makes very little difference in the total cost. Thus, for example, the cost of gas per pound of bread at $1 per thousand was found to be .7 mills, or 7/100 of a cent, surely it would make little difference whether you paid 1.4 mills for fuel, which would be the case if you had to pay $2 per 1,000 for your gas instead of $1, if in doing this you should decrease your labor cost one-quarter and your rental one-quarter, etc.

The next item you probably think of is labor, and well you might, for this item is several times the cost of fuel. In the same installation cited above the comparison of labor costs with gas as a fuel against coal showed the following unit cost per pound of product: .00232 cents with coal while with gas the cost was .000606, or practically one-quarter the labor cost with gas firing. Furthermore, the labor cost with coal firing was four times the fuel cost and this based on $14.40 coal. This item of labor saving is surely worth considering.

Another item you no doubt think of is waste goods or as you generally term it, "crippled goods." I do not have any figures on this, but if you were to make a comparison of the amount of goods spoiled in coal, coke or oil fired ovens with that in a gas oven you would probably be astounded at the results. You may ask where does this waste occur and how. Some waste is due to improper baking temperatures and this shows up in the product in the following ways:

Under-baked goods, burned goods, and improper rate of baking goods, which, as we pointed out previously, may spoil the appearance of the product by causing blow holes.

Another cause of waste goods, particularly in cracker baking or in the baking of small cakes and biscuits, where the goods are stamped out automatically and fed onto a belt from which the loading of the reel oven is done by scooping under the goods with a flat paddle or peel, is due to the failure of the goods to flatten out on the peel thereby becoming entangled and spoiling the design.

Gas Brings New Type Ovens

You may wonder how you are going to overcome this damaging of goods, *while loading,* when gas is used instead of the other fuels. Well my answer is, you cannot, if you merely substitute gas for the other fuels and continue to use the same oven. However, since the advent of gas in the baking industry, an entirely different type of oven has been developed, which was possible with gas but is not possible with coal, coke or oil, and this is the traveling oven. Most of you are familiar with one kind or the other of the continuous ovens; however, there have been some decided improvements recently in this type of oven and this has to do with the *loading feature* entirely, the others being the same. I

recently talked with a manufacturing concern which has developed a continuous oven for baking matzoths. In this oven the goods are fed directly from the stamping machine onto a conveyor and into the oven without any additional handling. The oven itself is 76 feet long and the goods travel through the oven in three minutes, although the speed may be varied. This, to my mind shows the ultimate use of the many advantages of gas over other fuels, something that was impossible of achievement with the solid or liquid fuels.

While this oven has not been tried on other types of goods, such as crackers, small cakes, etc., yet I have been assured it can be used for these. Think what this will mean to the baking industry. Instead of having from two to four men loading your reel ovens aside from the men, watching, regulating and feeding the automatic stamping machine, and only baking from 18 to 25 barrels of product per oven, through the use of ovens of this type fired with gas, it will be possible to produce from 45 to 50 barrels of goods with the same floor space, lower fuel cost and a decided saving in labor.

Since there have not been any continuous ovens in operation on cracker baking where automatic loading of the oven is used, it is impossible to give you any figures on the comparative results of correctly designed gas ovens as compared with coal fired ovens. I have, however, some comparative figures on bread and pie baking which I believe will show you what can be expected by the use of a correctly designed gas fired oven for cracker baking.

Some Comparisons

The following comparison is on two reel type coal ovens as compared with one conveyor type oven. Test was for a seven-hour run.

5,180 1½-lb. loaves baked on two reel ovens compared with 6,765 1½-lb. loaves on gas oven.

Fuel Used:

Hard coal used, 550 lbs.; coke, 800 lbs.; Gas 7,650 cu. ft. city gas.
Cost of coal @ $14.40/ton = $3.95 — Gas @ $1.00 cu. ft. = $7.15.
Cost of coke @ $10.00/ton = 4.00

Total coal and coke cost $7.95

Here we find that gas at $1 per M. is cheaper than coal and coke at $14.40 and $10 per ton.

The labor costs were:

Coal Ovens

1 man at	$32.00	per week
1 man at	24.00	per week
2 men at	20.00	per week
Total per week	$96.00	
or per day	$16.00	
Fire and ash removal	2.00	
	$18.00	per day

Gas Ovens

2 men at	$20.00	per week
Total	$40.00	
or per day	$ 6,67	

Thus the total costs per day for fuel and labor are:

Coal ovens $25.95
Gas Ovens $13.82

Let us see what the costs are per 100 lbs. of bread.

Coal, 33.4 cents per 100 lbs.—Gas, 13.6 cents.

Thus a saving of 19.8 cents per 100 lbs. of bread baked is saved by the use of gas ovens.

I wish to point out here that due to the fact that the gas oven has a greater production the overhead charge per unit of bread is considerably lower, so that some additional saving is effected than that given.

In the baking of pies a thirty-day comparison showed the following:

Coal at $10/ton.

Floor space, 0.50 per sq ft./year.

Taxes, depreciation, interest on investment, etc., 15 per cent.

	Gas	Coal
Cost, fuel	$1,468.80	$525.00
Labor	920.00	1,380.00
Cost of oven space	45.00	160.00
Value of coal storage space	.....	100.00
Taxes, depreciation, etc.	80.00	430.00
Total cost	$2,513.80	$2,595.00
Number of pies	612,000	580.000
Cost per pie	.0041	.00447

This comparison is interesting for several reasons. In the first place, it goes to show that the actual fuel cost with gas may be approximately three times as much as coal, yet the cost per unit of product is cheaper. This comparison also brings out the value of the floor space occupied by coal ovens and fuel storage space, and if you are contemplating an expansion in your plant, you should give serious consideration to the saving in floor space that can be effected through the use of gas as a fuel. In the installation cited the gas ovens occupied one-quarter the amount of space occupied by coal ovens, while the coal storage space alone was twice that now taken by the gas ovens.

While the above comparisons have been made between ovens correctly designed for gas and coal, substantially the same class of savings can be effected by the installation of gas to existing ovens, but of course to a lesser degree. There is one point I wish to bring out here and that is this—while most of you realize that gas is a high-grade fuel, just as electricity, yet you do not give it the same consideration when you go to use it. How many of you would think of applying electric heat to your present ovens—you say, why, that's absurd, and I agree with you, although it could be done. Therefore, consider the advisability of installing equipment designed for gas only.

I have given you comparative figures between correctly designed gas ovens and ovens using coal. Now let us consider the advantages gained by those who have applied gas to their existing ovens.

In one plant using reel ovens on crackers, animal crackers, etc., the following comparative results were given by the manager of the bakery as representing the cost of gas against coal—560 B.t.u. gas at 71 cents per thousand —coal at $9 per ton.

Gas consumed, 25 days, 875,000 cu. ft.	
Cost at 71 cents	$620.95
Flour used, 1,972 bbls.	
Water, 25 per cent of weight of flour, 1.42 cu. ft./lb. of dough.	
Cost of gas/100 lbs. of dough, .007	
Coal, 25 days at $9.00/ton	405.00
Fireman	125.00
Hauling ashes	20.00
Upkeep on grate bars	8.00
Repainting bakery/month, prorated	278.00
Total cost	$836.00
Production was 10 per cent less with coal, or 1,775 bbls.	
Cost with coal/100 lbs. of dough	$.1507
Cost with gas/100 lbs. of dough	.1007
Saving, using gas, .05/100	
Saving/month, $308	

While painting charges may be excessive as compared with other bakeries, yet the manager of this bakery insisted that gas saved them $278 per month on painting.

Some of you may want to know what gas consumption you may expect on converted reel type ovens baking different goods. While this will vary with each individual bakery, the following figures were obtained on test of same oven baking the different goods listed. Gas used was of 550 B.t.u./cu. ft.

Cookies	3 to 6 cu. ft./lb.
Animal crackers and light cookies	2 to 3 cu. ft./lb.
Graham crackers	2 to 3 cu. ft./lb.
Soda crackers	2 to 4 cu. ft./lb.

These figures include the gas for heating up the oven. The oven on which the tests were run was operated from 5 o'clock in the morning to 3:45 in the afternoon. The ovens were brought up to temperature in an hour and a half.

In another installation one cubic foot of 560 B.t.u. gas was found to be equivalent to 14 lbs. of coke. The production was increased so that the same quantity of goods could be baked in one shift that formerly required two, thereby saving materially on labor.

I wish to bring out here that while I have given figures based on 100 lbs. of dough—or 1 lb. of baked goods—these figures cannot be used as a comparison with what you might expect on the same kind of oven unless you are baking the same class of goods—or the same amount of the different classes as the case may be—I refer here to the baking of goods like crackers, ginger snaps, sweet foods, etc. This is due to the variation in dough content in different kinds of products.

No Harmful Effects Due to Gas

The American Gas Association has from time to time received inquiries from bakers relative to the use of gas as a fuel. While the majority of these questions related to how much gas would cost on different types of ovens, one question in particular had to do with a characteristic of gas. This question was: "What effect, if any, will the products of combustion of natural gas, city gas and producer gas have on goods baked in direct contact with the products of combustion?" This question can be answered with one word—"None," but to do so would still leave a chance for doubt in the minds of some so I am going to explain why.

In the first place, let us consider what the products of combustion of these gases are. They all produce carbon dioxide, water vapor or steam, and have present in the combustion products nitrogen and perhaps a small percentage of oxygen. In addition to these, some of the natural gases, and all of the city gases and producer gases, will produce some sulphur dioxide on burning. In the gas distributed by a public utility the sulphur content cannot exceed 30 grains per 1,000 cu. ft. After a careful consideration of various methods used in making baked products light we will find that the substances used in the dough give off the same kind of gases as are produced by the combustion of gaseous fuel, with the exception of sulphur dioxide. Thus it is evident that the only possible chance for the products of combustion to effect the bread *deleteriously* is through the sulphur dioxide. The amount of sulphur in the fuel, as we pointed out, is regulated by law on the gas distributed by the public utilities and the sulphur content is maintained below the harmful percentage. Furthermore, the fact that today we find hundreds of bakers using city gas for baking, and allowing the products of combustion in contact with the bread, is sufficient proof that the products of combustion do not affect the bread, if we needed further proof.

Other Uses for Gas

We have thus far only considered the advantages to be gained by applying gas to your baking operation. However, gas cannot only be used for heating your ovens but for supplying steam. It is just as imporant that a given quantity of steam at a given temperature and pressure enter the oven as to have accurate temperature control, for a variation in the temperature of steam and quantity will affect the oven temperature. Thus, automatic gas-fired boilers could be used

to decided advantage if all factors are to be eliminated. Take also the heating of the buildings—these could be heated by automatic gas-fired boilers, and the mixing rooms, storage bins, etc., should be so heated that accurate temperature can be maintained. A recent installation in one of the western bakeries consists of all ovens fired with gas—and two automatic gas-fired boilers of 27 B. h.p. each—one for heating the building and the other for steaming the ovens. This particular installation is a conversion job—that is, coal-fired ovens are converted to gas use. Had gas-fired equipment been installed, the steam requirement for the ovens would have been materially decreased.

This company, by the way, had plans already drawn up for a new factory and new equipment in another part of the city and they expect to move into their new plant within a year. Yet gas offered them sufficient advantages to go to the expense of installing gas in their old plant, although this equipment would be used for only one year.

There must be something to this talk about gas, the ideal fuel, for bakers to go to this expense to have it. Furthermore, it has been proved that bread, cakes, crackers, etc., baked by gas are not only equal to the best of these baked in coal-fired brick ovens, but also superior in some respects. The texture, flavor, moisture content are all equal to the best samples of goods baked in coal-fired ovens. In addition, there are three distinct points of superiority, viz., color, crust and uniformity. The color is evenly distributed over the top and bottom of the goods, the crust is very thin, and for this reason the goods appear to remain fresh for a longer time. Uniformity follows the use of gas-fired ovens, as surely as night follows day, because (in a correctly designed gas oven) every article must meet the same baking conditions as the next one, and no part of the process is left to the discretion of the operators after the dough has once started on its way.

In closing, let me give you a few of the headings of articles pertaining to the substitution of gas for other fuels:

"Fuel Makes All the Difference in the Quality."

"Gas Firing Increases Capacity."

"Less Spoilage with Gas Equipment."

"Working Time Cut in Half."

"Cleanliness is Next to—Added Profits."

"Safety from Fire, the Leading Attribute of Gas as Fuel." Gas is not included in the Bureau of Underwriters' list of the sixteen principal causes of fire.

"Economy in First Cost." Economy in operation and economy in upkeep, features of gas equipment.

"Gas Lowers Labor Cost."

"Gas Solves a Big Baking Problem." Bakery needing large additional output, installs conveyor type ovens, saving floor space and adding to production with reduced labor and fuel cost.

There must be some reason for such statements as these. As I stated in the beginning, you have shown your interest in gas as a means of reducing your production costs and improving your quality by inviting this paper on *Gas,* now it is up to you to go one step further and investigate the possibilities of gas as it pertains to your own particular problem. This is something that concerns you more vitally than the gas company, and as the slogan of one of the large flour *ually, Why Not Now,"* so it should be with you, and I am convinced that you manufacturing companies goes, *"Event*-too will come to realize the true meaning of the slogan of the gas industry, "IF IT'S DONE WITH HEAT, YOU CAN DO IT BETTER WITH GAS."

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Store and Window Displays

An address delivered before the Summer Sales Conference at Millbrook, N. Y., August 6, 1924.

ROBERT L. WARE, New York, N. Y.

I HAVE NO PET THEORIES or fancies on window and interior displays. All I know about both displays and decorations I have gotten from getting my fingers burned. As a result, I do know that some types of windows are very successful on one side of the street and if they are exact copies, or even are original, they may not be so successful on the other side of the street. I know also that some windows are very successful on sunshiny days and they are not so successful on rainy days. I also know that windows beautifully trimmed and artistically presented under natural light, are extremely unattractive when the artificial illumination is thrown on. What I am going to say applies as well to good will windows—I mean the creation of good will for your company. It also applies to gas and electric windows as well as to other types of windows; drygoods, shoes, clothing, hats. It also applies to interior decorations and interior arrangements in the store.

I want to say at this point that a window which has no sales appeal, which does not definitely get across a definite idea and connect it up very closely so that the merchandise may be obtained

easily inside, is absolutely worthless. A window which is simply a beautiful picture and does not sell, better be taken out and let the bare window ride on its own merits. When such representative concerns as John Wanamaker in New York and Philadelphia, Macy's and Gimbel's in New York and Marshall Field in Chicago, highly value their window space there certainly must be something in window display.

Nevertheless, the average merchant in no way takes to heart, and gives the time and effort to display and interior decorations that he should.

To my mind, windows are very similar to a job of merchandising men's hats, of which I know something. We knew in building this campaign of selling men's hats that everything was right, based upon research and investigation. But when these hats were stacked up against other hats on the dealers' shelves, they did not sell. Naturally the campaign was worthless. We started over again to investigate. A happy thought occurred to us; that the hat which we were trying to sell, at some slightly higher price than other hats with which it competed, had no real identification mark. The result was that we put this hat in a very attractive carton. This resulted in the identification mark required. Despite the fact that that hat was a little higher in price it did sell and the campaign from then on was successful and the hats have been selling ever since. The analogy between that and window displays and interior decoration is close. The window is your identification mark. It is that something at the point of contact which makes you known favorably or unfavorably in your community. It is the something which makes you stand out as a progressive dealer or a dealer of another type and color.

I cannot overemphasize the value of good sales windows closely connected up with equally good and well-planned interior displays. I want to say also that a window display and interior display have got to be well planned. You cannot expect on the spur of the moment to put in a window display and even hope to have it successful. I am a firm believer in planning windows six months in advance on a regular schedule. I am a firm believer in having window displays most closely correlated and connected up with the advertising department. I do not think that it should be under the supervision of an advertising manager, unless he is as good a display man as he is the finished supervisor in his other duties. Neither do I think that a display department can be under the supervision of the office boy. Nor do I believe it can be under the supervision of the president of the corporation. It needs a specialist like your advertising man in his department, like your financial man in bonds and disbursements, and like your engineer in construction and maintenance.

You may ask me, how are you going to do this? In other words, what do you call a good window display? I cannot go into a great deal of detail because time will not permit and experience is the best teacher, but I will go over briefly some of the high spots in putting in what I believe is a good display window.

I divide, for my own satisfaction, windows into simple or single idea windows and the complex or the multiple idea window. I mean by a single idea window, a window which presents in any way you please one single, tangible selling idea. You know the human mind cannot take away more than one idea or impression at a time. I have always been more impressed with that window which presents the single idea than I have with

the window which presents a multiplicity of ideas. The latter often conglomerates the window and shows nothing sufficiently vivid. Thus, the observer takes away no impression at all.

The other type of window is the multiple type of window or a window which presents several selling ideas or introduces extraneous material in a single idea window. Roughly, those are the two kinds of windows. It is the simple window carrying to the observer the single idea which to my mind should be followed generally and the other type sparingly. But the surroundings and conditions vary with the job.

For good window displays I believe that some material or appurtenances, that I call fixtures, are necessary equipment. Under equipment I list pedestals, taborettes, plateaus; things on which you may arrange your diplays in nature's way of presenting hills and valleys so that the window does not have that flat uninviting appearance. Next, I think you need some woven material such as duvytene, velvet or satin, so that you may drape these pieces of merchandise and the fixtures on which they stand so as to make a picture which presents the articles more forcibly to the observer's mind.

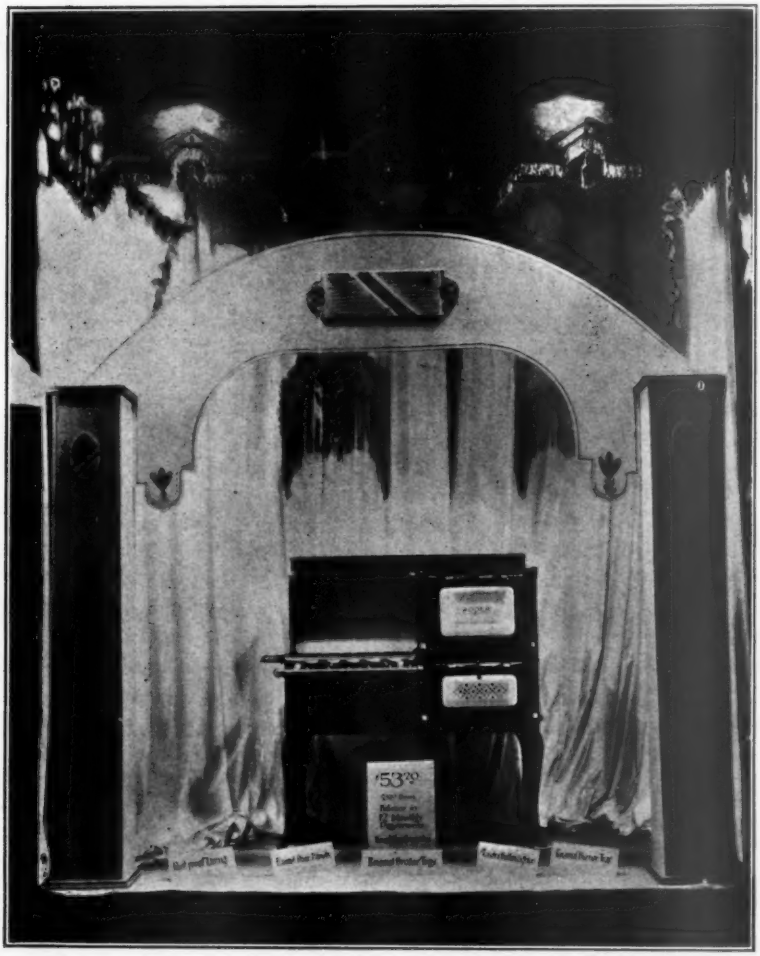
I believe in seasonable windows. Artificial flowers will be found very helpful in presenting a seasonable window and giving color and life to a window which otherwise might not be possible. Gas and electric appliances of themselves do not carry much color. Therefore, introduce color this way in addition to the cloth or the woven fabrics in decorating a window. You can get some very effective windows with the use of tissue paper: designed, plain, in solid colors, in strips, in bands.

I think you should use some discretion in illumination. I am a strong advocate of colors in illumination, the use of color slides which give the warm tones; the use of amber slides, the use of rose slides each of which give life and variety to windows as well as illuminate. White, you know, is the clean color. You require natural illumination as close as possible. With the use of proper lighting equipment in the window, using colors and spotlights, you will get some very effective windows which will prove inviting to the people who pass by casually or who are attracted to your window as the result of your advertising.

One more thought I want to bring to you. I am a firm believer in keeping a record book on each sheet of which is allotted space for a rough sketch of the display, if you please, showing the position of articles shown, the general arrangement of the window so that you need not repeat those which were not successful and those which were successful you may improve upon. On this same page is allowed a place for the time of year, noting the decoration, showing the time it was in, showing the number of people who actually came into the store, and showing the cash receipts. This is the test of a good window. For, after all, the window which does not sell is worthless and you might as well take it out.

Changes in windows should be frequent. When I say frequent, if I told you twice a week, you would hold your hands up in despair. The oftener you can change your windows systematically, specifically, on well defined schedule, keeping the whole window and everything in it spotlessly clean, keeping finger marks and everything else out of it.

keeping it properly illuminated, having it properly correlated with the other advertising, having it under proper supervision, the better. To my mind, these things when determinedly carried out, are a very good start towards what I call a better and more profitable window display and interior decoration.



The winner of the August window display prize

Contributed by F. A. North, Northern Indiana Gas & Elec. Co., Fort Wayne, Ind.

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Lightning Takes a Hand

After reading the description of this accident, if you have any ideas of how the explosion occurred or what caused it, Edward H. Bauer, Manager of the Worcester Gas Light Co., Worcester, Mass., would be very glad to hear from you. (EDITOR'S NOTE.)

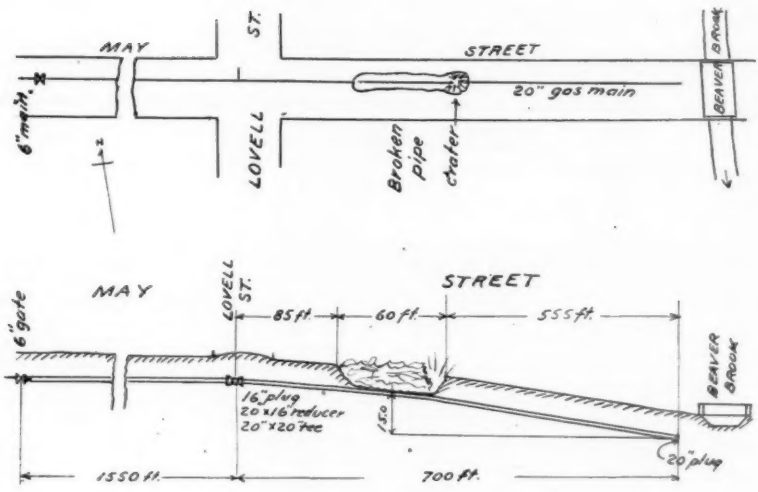
THE WORCESTER GAS LIGHT CO. have been reinforcing their distribution system with a 20" feeder main to reach an outlying district and this year started to tie in the section which heretofore had had no gas.

Starting at Beaver Brook this 20" main runs up hill on May Street for a distance of 700 feet. The Beaver Brook end was closed with a 20" plug. At the intersection of May and Lovell Streets there was a 20" x 20" x 16" tee with a plug in the 16" side. Continuing along May Street for a distance of 1550 feet from this tee, the 20" main connects with an old 6" main through a new 6" gate valve, all as shown in the accompanying plan and elevation.

This 20" main had been laid in the street about three weeks prior to the storm and was covered with slightly over two feet of ground. There had been no gas on the main. The 20" and 16" plugs were tight as was the new 6" gate valve which was closed.

On August 6th Worcester experienced one of its most severe electrical storms and sometime around ten o'clock that evening the lightning struck at one or more points near the intersection of May and Lovell Streets. In doing so it evidently passed through or into the 20" main with the following results.

Beginning at a point 85 feet from the intersection of Lovell and May Streets, 60 feet of the street was torn up along



Plan and Elevation.

View No. 1.

View No. 2.

View No. 3.

View No. 4.

the line of the main and the pavement was upheaved for over three feet on either side of the pipe. This is clearly shown in View No. 1. This was taken looking northwest on May Street. The temporary pipe shown in the picture is used while the construction work is going on. It will also be noticed that at the intersection of Lovell and May Streets (left hand side of the photograph) there is another upheaval. A closer view of this is shown in View No. 2. In the center of View No. 1, just below the pile of laths, what appears to be a board is a part of the 20" main protruding from the ground.

View No. 3 shows a crater which was formed by the exploding of the main. This was at the easterly end of the long upheaval, on the right hand end as shown in View No. 1.

View No. 4 shows the damage done by the lightning as displayed after excavating the trench. The pipe was literally splintered from one end to the other, five sections being completely demolished. This is more clearly seen in the closeup shown in View No. 5.

The Worcester Company have so far come to the conclusion that one of three things may have caused the damage:

1. If the lightning struck near the pipe it may have caused a partial vacuum and, coming so suddenly, caused the air inside of the pipe to expand which in turn would rupture the pipe.

2. If the lightning struck directly over the pipe and passed through it, it may have caused the air in the pipe to expand and, inasmuch as the pipe was dead ended and valved off, the expanding air would explode the pipe.

View No. 5.

3. The pipe runs down hill. The lower end was plugged off. Inasmuch as the lower end was laid first, that is, the pipe was laid uphill, there may have been a pocket of water in the lower end. If the lightning struck this main it may have heated this water to the boiling point, formed steam, which in turn, exploded the pipe at the highest point and at the place where it had the least amount of earth cover.

Close examination on the morning following the storm brought out that the leaves on some of the trees showed evidence of the lightning passing through them, although no such damage was done to the trunks. The limbs of the trees showed that stone and mud had been blown up against them by the force of the explosion.

The Dehydration of Coal Gas Tar, Water Gas Tar and Other Waste Emulsions Incidental to Manufactured Gas Production

G. A. SIMMONS, Philadelphia Suburban Gas & Electric Company, Chester, Pa.

This paper forms a part of the Report of the Committee on Disposal of Waste from Gas Plants. (EDITOR'S NOTE.)

IN THE JULY ISSUE of the American Gas Association Monthly, Mr. A. W. Warner, Research Engineer, of the American Gas Company, published an article accompanied by a diagrammatical sketch (shown) of a new method for the dehydration of coal gas tar containing a high percentage of water and free carbon, developed at the Tilghman Street Works of the Philadelphia Suburban Gas & Electric Company, Chester, Pa.

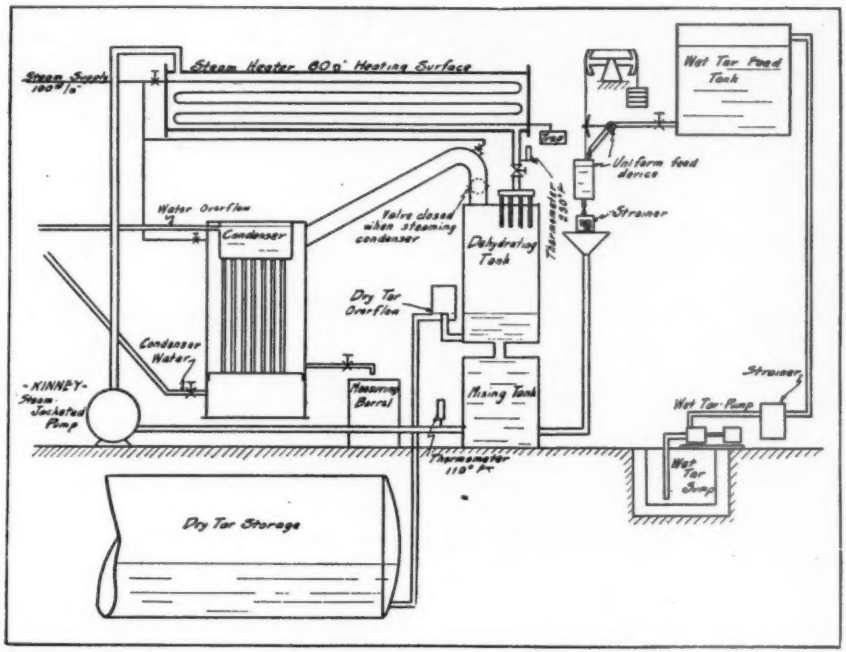
Since the publication of this article we have dehydrated water gas tar emulsion, also a waste emulsion containing a high percentage of low boiling point oils, separated from the water seal of a water gas relief holder.

This new method consists of the continuous circulation of a certain quantity of the hot dehydrated coal gas tar, water gas tar or other emulsions through a specially designed steam coil heat exchanger, slop tank (dehydrating tank) connected with a condensor and a mixing tank with the addition of the product to be dehydrated at the mixing tank.

The accompanying diagram clearly shows the method of operation, however certain minor changes have been made in apparatus and in operating temperatures. A small dehydrating unit has been added and the temperature at outlet of heat exchanger changed; coal gas tar 245°F., water gas tar 235°F., and other emulsions determined by their vaporization point. The temperature shown at the outlet of the mixing tank should read 180°F to 200°F. This was an error on the diagram. The radiation surface in the heat exchanger has been increased to 140 sq. ft. The steam pressure is maintained at about 120 lbs. gage. The feed pipes into the dehydrating tank have been reduced to three. The measuring barrel at the outlet of the condensor has been replaced with a tank of sufficient size to allow time for the separation of the light oils from the aqueous condensate. These oils are added to the dry tar or used for other purposes.

The product to be dehydrated is passed through a ¼" strainer and stored in an overheated tank and passes by gravity through a constant feed regulator into the mixing tank.

The dehydrating unit consisting of a mixing tank, a steam coil heat exchanger, and slop tank (dehydrating tank) connected to a condensor, is filled with the product to be dehydrated and slowly heated and circulated until the water content has been reduced to about 6%. The temperature at the outlet of the heat exchanger is raised slowly until 245°F. is reached. The cold product to be dehydrated is now added at the mixing tank to the hot circulating partly dehydrated product, reducing the temperature of the mixture to about 190°F. This mixture is pumped through the heat exchanger and the temperature raised and maintained at 245°F. at the outlet and then



enters the slop tank, at this point the water as steam passes into the condensor and the partly dehydrated emulsion is divided, part entering a small dehydrating unit (not shown in sketch) for the removal of the last traces of water and the other part entering the mixing tank to be mixed with the cold emulsion from the overhead storage and again pumped through the heat exchanger into the slop tank and this operation continued. The quantity of the product added at the mixing tank is determined by the temperature at the outlet of the heat exchanger. It must be constant at 245°F. The small dehydrating unit consists of a small heat exchanger and slop tank connected with the condensor through which the partly dehydrated product from the large unit passes by gravity and then to the dry storage tank.

The condensate from coal gas tar emulsion is collected and after the separation of the small amount of light oil is pumped to the weak ammoniacal liquor well.

The apparatus installed at the Tilghman Street Works, Chester, Pa., uses steam at 120 lbs. gage pressure and has a heater with 140 sq. ft. radiation surface and is capable of dehydrating 450 gal. per hour of tar containing a moisture content of 25% at a temperature of 60° F. The steam cost for heating the tar and operating the Troy engine and pumps will not exceed .2 of a cent per gallon and the labor cost is also less than .2 of a cent making the total cost about one-third of a cent per gallon of resultant dry tar.

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Associations Affiliated with A. G. A.

Canadian Gas Association
Date of affiliation—Mar. 25, 1919.
Pres.—E. R. Hamilton, Nova Scotia Tramways & Power Co., Halifax, N. S.
Sec.-Tr.—G. W. Allen, 7 Astley Avenue, Toronto.
Conv., 1925.

Empire State Gas and Electric Association
Date of Affiliation—Nov. 21, 1919.
Pres.—S. J. Magee, Associated Gas & Electric Cos., Ithaca, N. Y.
Chairman Gas Section—F. F. Ingwall, Binghampton Gas Works, Binghampton, N. Y.
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.
Annual Meeting, Lake Placid Club, N. Y., Oct. 6-7, 1924.

Illinois Gas Association
Date of Affiliation—Mar. 19, 1919.
Pres.—J. G. Learned, Public Service Co. of Northern Illinois, Chicago, Ill.
Sec.-Treas.—R. V. Prather, 305 Illinois Mine Workers Bldg., Springfield, Ill.
Conv., 1925.

Indiana Gas Association
Date of Affiliation—April 24, 1919.
Pres.—G. M. Johnson, Northern Indiana Gas & Electric Co., South Bend Ind.
Sec.-Tr.—E. J. Burke, Citizens Gas Co., Indianapolis, Ind.
Conv., 1925.

Iowa District Gas Association
Date of Affiliation—May 21, 1919.
Pres.—H. J. Carson, Cedar Rapids Gas Co., Cedar Rapids, Ia.
Sec.-Tr.—H. R. Sterrett, 551 Seventh St., Des Moines, Ia.
Conv., 1925.

Michigan Gas Association
Date of Affiliation—Sept. 18, 1919.
Pres.—Chester Grey, Lansing Fuel & Gas Co., Lansing, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.
Conv., 1925.

Missouri Association of Public Utilities
Pres.—C. L. Proctor, Empire District Electric Co., Joplin, Mo.
Sec.-Tr.—F. D. Beardslee, 315 N. 12th. St., St. Louis, Mo.
Conv., 1925.

New England Association of Gas Engineers
Date of Affiliation—Feb. 19, 1919.
Pres.—C. R. Prichard, Lowell Gas Light Co., Lowell, Mass.
Sec.-Tr.—J. L. Tudbury, 247 Essex St., Salem, Mass.
Conv., 1925.

Gas Sales Association of New England
Date of Affiliation—Oct. 1, 1919.
Gov.—J. J. Quinn, Citizens Gas Co., Quincy, Mass.
Sec.—J. H. Sumner, 719 Massachusetts Ave., Cambridge, Mass.
Annual Meeting, 1925.

New Jersey Gas Association
Date of Affiliation—April 25, 1919.
Pres.—Raymond W. Lee, Cumberland County Gas Co., Millville, N. J.
Sec.-Tr.—R. A. Koehler, Public Service Gas Co., Newark, N. J.
Conv., January, 1925.

Pacific Coast Gas Association
Date of Affiliation—Sept. 18, 1919.
Pres.—H. R. Basford, H. R. Basford Co., San Francisco, Cal.
Sec.-Tr.—W. M. Henderson, Los Angeles Gas & Electric Corp., Los Angeles, Calif.
Asst. Sec.—Clifford Johnstone, 619 Wells Fargo Bldg., San Francisco, Calif.
Conv., 1925.

Pennsylvania Gas Association
Date of Affiliation—April 10, 1919.
Pres.—John A. Frick, Allentown-Bethlehem Gas Co., Allentown, Pa.
Sec.-Tr.—Geo. L. Cullen, Harrisburg Gas Co., Harrisburg, Pa.
Conv., 1925.

Southern Gas Association
Date of Affiliation—May 20, 1919.
Pres.—W. H. Taylor, Georgia Railway & Power Co., Atlanta, Ga.
Sec.-Tr.—J. P. Connolly, 141 Meeting St., Charleston, S. C.
Conv., Wilmington, N. C. June 9-11, 1925.

Southwestern Public Service Association
Date of Affiliation—September 26, 1923.
Pres.—G. W. Fry, West Texas Utilities Co., Abilene, Texas.
Chairman Gas Section—F. C. Armbruster, Southwestern Gas & Elec. Co., Shreveport, La.
Sec.—E. N. Willis, 403 Slaughter Bldg., Dallas, Texas.
Conv., 1925.

Wisconsin Utilities Association
Date of Affiliation—March 25, 1919.
Pres.—G. C. Neff, Wisconsin Power & Light Co., Madison, Wis.
Chairman Gas Section—J. G. Felton, Northern States Power Co., La Crosse, Wis.
Exec.-Sec.—J. N. Cadby, 445 Washington Bldg., Madison, Wis.
Conv., 1925.

Geographic Divisions

Eastern States Gas Conference
Date of Formation—April 11, 1923.
Pres.—P. S. Young, Public Service Gas Co., Newark, N. J.
Sec.-Tr.—R. A. Koehler, Public Service Gas Co., Newark, N. J.
Conv., April, 1925.

Employment Bureau

SERVICES REQUIRED

WANTED by a gas and electric company, young man to do office work who has had experience in ledger work, general routine work, and especially on the complaint or service desk. In reply, please give outline of experience, references and salary expected. Address:
Key No. 022.

WATER HEATER SALESMAN WANTED—A large gas company needs several good water heater salesmen to work on commission basis in Western Pennsylvania. Exceptionally good territory.
Key No. 026.

WANTED—Two experienced salesmen, to specialize on the sale of gas boilers for house heating and industrial uses, by a gas company desirous of increasing its present gas boiler load. Give details of experience and results obtained.—Address A. G. A.
Key No. 039.

APPLIANCE SALESMEN—Calling on Gas Companies to sell tank water heaters as a side line on commission basis. State territory, references and experience. Address A. G. A.
Key No. 042.

WANTED—Gas main laying foreman for gas company in vicinity of New York. Address A. G. A.
Key No. 044.

WANTED—A Gas Company desires the services of a technically trained man, having had experience in main and service work; college graduate preferred. Address A. G. A.
Key No. 045.

SERVICES OFFERED

WANTED—Position of responsibility as Manager or Industrial Fuel Engineer—18 years' varied experience in the gas business. References and service record furnished. Address A. G. A.
Key No. 142.

ENG-SUPT. of one of the largest gas plants in the country would consider change. Desires to locate with company in which opportunities for future advancement are better than in present position. Is a married man. Has technical University training. No particular preference as to location. Address A. G. A.
Key No. 159.

AVAILABLE—Man of executive ability, experienced in all phases of the gas business and sales and advertising work, including agency work on National accounts. Capable of creating, planning and following through all forms of advertising. Prefer locating in West or South Atlantic states. Minimum salary of $4,000. Address A. G. A.
Key No. 167.

WANTED—Supertintendent of Distribution seeks similar position high or low pressure. 14 years' experience covering all branches of the work, office, field, and shops. Speaks and writes Spanish. Southern part of U. S. or Latin America preferred but not essential. Address A. G. A.
Key No. 169.

AM OPEN FOR A POSITION of greater responsibility. At present manager of gas company with over 5,000 meters. Technical training, started in as cadet engineer with one of largest operating companies in U. S. Have eleven years' experience in engineering, construction, distribution and manufacturing, and over four years in commercial, new business and financial as manager. Prefer manager's position in good sized city. Age 40 years and married. Address A. G. A.
Key No. 170.

GAS ENGINEER—Eighteen years' experience in design, construction and operation of gas plants, all departments, manufacture and distribution, also electrical experience in combination plants desires position of responsibility with progressive company. Past six years chief engineer with large gas company. Address A. G. A.
Key No. 171.

EXECUTIVE, with fifteen years' experience in coke oven practice on plants manufacturing surplus gas for city consumption, desires connection with growing public utility either as executive or position leading to same. College graduate, good personality, married. Available on reasonable notice. Address A. G. A.
Key No. 172.

GAS ENGINEER—18 years' experience with 3 largest gas companies in the country, am open for engagement as gas engineer, general superintendent, manager or gas sales engineer. Excellent references. Address A. G. A.
Key No. 173.

WANTED—A position as General Manager or Engineer of Gas Property. Have had experience and can produce results in either large or small properties. Can give exceptional references on past record. Address A. G. A.
Key No. 175.

GAS ENGINEER, 40, with thorough training (17 years) in the gas business and real executive ability, wishes to connect up with a live concern in any capacity where technical and commercial ability will count. At present engaged, but could be available on two months' notice. Address A. G. A.
Key No. 176.

WANTED—Executive position by young man with eighteen years' (18) experience in all branches of gas business. Eight years (8) as manager. Past four years, vice-president and general manager of gas company with nearly 10,000 meters. Mechanical engineer. Expect to voluntarily place myself on the market about August 15, 1924. Will accept position as manager of company with 7,000 to 10,000 meters, or assistant manager and engineer, with larger company. Married man. Replies must be strictly confidential. Address A. G. A.
Key No. 177.

WANTED—Am open for position as appliance salesman with Gas Company or Appliance Manufacturer. Have had twelve years' experience selling ranges, water heaters, room heaters and illuminating devices. Am at present employed in this capacity by a large corporation, but desire to make a change. Can furnish references from present and past employers. Married. Can report on reasonable notice. Address A. G. A.
Key No. 179.

WANTED—Am open for a position as a salesman for a gas appliance manufacturer or as manager of a gas appliance department with a gas operating company, eighteen years' experience with mechanical and technical training. Married. Can furnish A1 references. Address A. G. A.
Key No. 180.

COKE PLANT EXECUTIVE seeks new connection. Over eight years' experience, Koppers and Solvay ovens with complete by-product recovery. University graduate, thirty-four years old, married, with one child. Fitted for Assistant Superintendent or Assistant to Manager of any coke or gas industry. Will locate anywhere. Address A. G. A.
Key No. 181.

ENGINEER STATISTICIAN—10 years' experience in the valuation and operation of mines, industrial plants, and public utilities in connection with the maintenance, statistical, legal and accounting phases of business, now seeks permanent engagement with reputable firm. Address A. G. A.
Key No. 183.

WANTED—Position as Manager of Gas Company. Coal or water gas. College trained. Have served in works, street and office. Doubled meters and doubled output in last position. Address A. G. A.
Key No. 184.

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